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THE MEDICAL OFFICERS TRAINING CAMP.*

ELMER S. TENNEY,
Major, M. R. C., Instructor in Military Hygiene and Sanitation, M. O. T. C., Fort Riley, Kan.

THIS camp was established by order of the War Department, in June, 1917, the work to continue with successive classes as long as might be necessary. The present commandant, Col. William N. Bispham, Medical Corps, U. S. Army, organized the camp and has been constantly at its head from the start. To him is due the credit for the efficient manner in which it has been conducted and the excellent results obtained. The following paragraph from the above mentioned order states the purpose of the camp:

"The proposed training is intended to reach all the untrained medical officers now in, or hereafter to enter the service, and give them reasonable insight into their new functions, and into those of their subordinates, with the least possible delay. The officers so trained must be able not only to perform their own duties efficiently without supervision of more experienced officers, but also to act as efficient instructors of their subordinates, both commissioned and enlisted."

The mere statement of the number of student medical officers and enlisted men of the Medical Department who have been trained here, together with a list of the various medical units into which they have been organized suffices to show clearly the work done.

Since the opening of the camp about 3,000 physicians from all parts of the United States have been taught the many and varied duties of the medical man in the army, and more than 10,000 enlisted recruits have been drilled, trained and organized into the following medical units, the officers for these same units being furnished from the student officers of the various classes.

The medical units organized have been as follows:

Ten Ambulance Companies.

Eleven Field Hospitals.

Two Evacuation Ambulance Companies.

* Published by permission of the Surgeon-General

Eight Evacuation Hospitals.
Eight Hospital Trains.
Four Sanitary Detachments.
One Veterinary Corps.
One Band.

The course of training for the student medical officers is of three months' duration, and represents over 540 hours of actual work in field and classroom exercises. A wide range of subjects is covered by means of drills, rides, lectures, recitations and demonstrations, and by assignments to various organizations for short periods of actual duty. The object always in view being to give the new medical officer a practical working knowledge of the duties he will later be required to perform.

The new arrival is immediately assigned to a student officers company, where he lives under the strict routine of the soldier, being required to attend all formations and in every way to conform to military discipline, in order that he may himself become familiar with it and thus the better be capable of maintaining proper and just discipline over those officers and enlisted men he may later command.

Not the least important result of the course to the medical officer, and to the service as well, is his greatly improved physical condition, due to more regular habits, more regular hours, more regular meals of plain, wholesome food; and the many hours spent in the open in drills, rides and map making.

It is not the purpose of this article to describe, or even to enumerate all of the various subjects taught during the three months, however it may be that mention of a few of the more important should be made. It is, of course, essential that the new man should be instructed in the fundamental principles laid down in *Army Regulations*, the Manual for the Medical Department, the Field Service Regulations, the Manual for Courts-Martial and the Drill Regulations and Service Manual for Sanitary Troops, in order that he may become familiar with those rules which define his relations to the service and to the individuals in it. He must be taught how to draw and to read maps, and must be made familiar with the paper work of the medical department, and to this end the various blank forms are explained to him and he is required to prepare complete sets for himself.

Considerable time is devoted to the internal administration of ambulance companies, field and evacuation hospitals, base and general hospitals. Many lectures and demonstrations are given upon special subjects, such as war surgery, orthopedic surgery, roentgenology and psychiatry.

One of the most important subjects in the entire course is that of Military Hygiene and Sanitation which is covered in twenty hours of classroom work, eight hours devoted to outside demonstrations at the Field Laboratory of Experimental Sanitation and two hours to the making of actual sanitary inspections about the camp. This ends the course for the majority, but those officers who are found to be best qualified to perform sanitary work are detailed to duty at Camp Funston, at first simply accompanying the sanitary inspectors on their daily

rounds, but later actually becoming assistant sanitary inspectors themselves.

Here they are doing actual camp sanitary work, but under the eye of experienced men, who guide them and give them suggestions when necessary, but who encourage them to depend as much as possible upon themselves. These details to duty at Camp Funston are not made for any definite length of time, but if a man proves to be competent, he usually continues at this duty until a call comes in from some division, when he is assigned as sanitary inspector.

The classroom instruction in sanitation covers, by means of lectures, recitations and examinations, the subjects of the general duties of sanitary officers, their relations to line organizations, the responsibility of the medical officer in the training of the recruit, personal hygiene of the soldier, including his feeding, clothing and housing. Under housing is discussed the permanent and temporary barracks and the various types of tents in use, as well as the heating, lighting, ventilating and general care of each.

As the two prime requisites of the soldier are to be able to march and to fight, considerable attention is given to the duty of the medical officer in connection with the care of marching troops. The personal hygiene of the soldier on the march is discussed, and also the sanitary precautions to be observed both for the protection of the troops and for the protection of the inhabitants of the community through which they are passing.

Particular attention is given to the procuring of safe drinking water for the men, and also to the manner in which water shall be used during the march. The rates at which the different organizations march, the distances usually covered in a day, the methods employed for handling the sick on the march are all taken up and described in detail. The wheeled kitchen is first described in the classroom and then the type in use in the United States Army is actually exhibited and explained in detail, particular attention being called to its application to trench warfare whereby the troops may be provided with warm meals—something which would otherwise be impossible. Special stress is laid upon the sanitary points to be considered in the selection of camp sites, following which comes the subject of camp sanitation to which several days are allotted, covering water, fuel and food supply, garbage disposal, latrines, picket lines, disposal of horse manure, camp police, dumps, incinerators, soakage pits, fly prevention, bathing and laundry facilities and methods of disease prevention.

The special sanitary measures to be applied where troops are billeted in a friendly country are outlined, as are also those dealing with trench warfare, battlefield sanitation and the disposal of the dead. The more common camp diseases are discussed in some detail, comparisons being made between those of former wars and those of the present war in Europe and a brief but concise outline is given of the manner in which each is transmitted and of the proper preventive measures necessary.

Concurrent and terminal disinfec-

tion and terminal fumigation are described and indications for their use mentioned. A brief description of the habits and life histories of those insects capable of transmitting disease, together with the methods best adapted to their destruction and prevention, forms the last subject considered.

The indoor part of the instruction being completed, the class is divided into sections to receive their instruction at the Field Laboratory, where they see actual working models of some sixty different sanitary appliances for camp use. These include not only those devices which have been long in use in our own and foreign armies, but also new inventions which are being tested to determine whether or not they have any qualities which justify their use in the field. One new device has attracted not a little comment, and will doubtless be brought into general use in the near future and therefore it will be mentioned at some length. The disposal of garbage in military camps has always been a more or less troublesome problem and, in Europe, where all kinds of fuel is scarce, it becomes a matter for serious consideration.

In an endeavor to devise an incinerator for garbage which would use a minimum quantity of fuel, and therefore be particularly adapted to meet the above problem, Maj. Charles S. Williamson, M. R. C., of the Department of Military Hygiene and Sanitation, has brought out an apparatus which has surpassed all expectations.

Due to the kindness of Major Williamson, I shall briefly describe it in this article. A full, technical description of the incinerator, by the inventor himself, will appear in another publication.

This incinerator consists of a brick stack or chimney twelve feet in height, the internal measurements being four and one-half by six feet.

At the base of the stack there is a fire grate made of iron pipes, and at regular intervals above horizontal shelves are arranged alternately from front to back. The lower shelf covers but half the horizontal surface area of the inside of the stack, while the other five are wider and cover all but the space of a foot on the longer side. These shelves, when in place, are arranged like baffle plates in a tank, and the tank being then stood up on one end. They can be made out of old boiler plate, if not too thick, their supports being of wrought iron or steel, as the heat which they are required to withstand is intense. Old wagon tires straightened and bolted together answer well for this purpose.

All iron-work is so arranged as to be readily removable, the work of removing it requiring but half an hour, so that it is not at all difficult to make repairs, if any of the parts burn out.

To operate the incinerator, first put a load of garbage on the top shelf, then push that down from shelf to shelf until it reaches the lower shelf, and then repeat the process until the incinerator is full. At the start only one or two inches of garbage should be placed upon a shelf, but later after the shelves and the walls have become thoroughly heated the depth may be about four inches.

A brisk fire is then started upon the grate—and it has been determined that

about two hundred pounds of wood is necessary in order to insure a good start. As soon as the garbage on the lower shelf dries and begins to burn it is pushed down into the fire on the grate, where it acts as fuel with which to dry and burn the garbage from the shelf above. As soon as the lower shelf is cleared of its load the contents of each shelf is pushed down to the shelf below, and a fresh load is placed upon the top shelf. Observation shows that the garbage can be pushed down one shelf about every two to three minutes. After the garbage begins to burn and to be carried down into the grate no more fuel is required, no matter whether the quantity to be burned be large or small. Wood is only required at the start. An incinerator of this size burned, at a recent test, 16,000 pounds of garbage in four hours and fifty-five minutes and, on another occasion, when no effort was made to crowd it burned 19,013 pounds in eleven hours and twenty-three minutes. In each trial two hundred pounds of wood was used in starting, and none thereafter.

This incinerator is one which can be built in a short time, at almost any place; the materials are not expensive, and the work can be done by anyone who can lay brick. It is extremely economical of fuel. It can easily handle the garbage of a division, and it would seem to be the logical type to build at all large camps which are to be maintained for a month or more.

The possibility of adapting this type of incinerator to the needs of small cities should be considered. The initial cost for materials and labor in construction is so small that it could be easily met by even the poorest municipality, the fuel expense would be nothing, as enough refuse would always be at hand for that purpose, and the only item to be met would, therefore be that for labor.

The making of sanitary inspections of various organizations in the camp closes the class instruction in sanitation, after which those who have been selected for this branch of work are assigned to duty at Camp Funston, as above described.

Throughout the entire course an effort is made to keep strictly to the practical side of the work, few theories are discussed, and the student is required to learn details of only those appliances which have been proven to be of definite value.

In this paper I have purposely described only the special training given to those student officers who are to make the subject of sanitation their particular line of work after they are assigned out to regular duty with troops, but it is to be understood that there are many other special courses which prepare student officers for work in other special lines, such as orthopedics, roentgenology and hospital work, both medical and surgical. In fact there are many post graduate courses which are available for those who are qualified to take them, and an effort is made to get the new medical officer into the work which he is best qualified from previous experience to fill.

The results obtained indicate that the camp has fulfilled the purpose for which it was established.

RURAL HEALTH ADMINISTRATION UNDER THE CO-OPERATIVE OR LOCAL HEALTH DISTRICT PLAN.

GUSTAV F. RUEDIGER, M. D.,
Former Health Commissioner for LaSalle, Peru and Oglesby, Ill.

Read before the Public Health Administration Section, October 17, 1917, at Washington, D. C.

I WISH to preface my paper by saying that the Committee on Rural Health Administration has come to an agreement that the phrase "Rural Health Administration" shall refer to health administration in purely rural settlements and small urban communities with a population less than 30,000.

Great progress has been made during the last twenty-five to thirty years in public health practice and sanitation but as yet most of the advances made have found practical application only in our larger centers of population. Here we have expert vital statisticians, epidemiologists, bacteriologists, diagnosticians for obscure cases, milk and dairy inspectors, medical school inspectors and a corps of public health nurses, all of whom are working toward one common goal—prevention of sickness. It is very different, however, in the smaller cities, villages and rural communities. There are but few cities with less than 30,000 inhabitants, and probably none with less than 15,000 that have even a full-time health officer, to say nothing about a bacteriologist, milk and dairy inspector and school nurses or other school inspectors. This, I believe, is due primarily to lack of funds, and this latter condition is due to the fact that our unit for establishing a more or less independent health department is too small. We cannot expect cities with a population from 2,000 to 10,000 to engage a full-time health officer, public health nurses, a bacteriologist and a milk and dairy inspector because the expense of maintaining such a staff is too great for such a small community. Moreover, if a way were found to finance such a health department the public health work required to be done would not keep the staff busy over half of the time, and there would, therefore, be a useless waste of money.

Most of these difficulties can be entirely overcome by coöperation of neighboring towns, villages, and cities under 30,000 inhabitants. If two or more towns, including all incorporated villages and cities therein, get together on the matter of public health administration and create a public health district (said district in most instances to have a population of at least 20,000 to 25,000 people) then a fairly good revenue can be got for the support of an efficient and properly organized health department and the work will be sufficient to keep a small staff busy all of the time. The area must have some kind of a political organization with a governing body which may be called a board of health, or a board of trustees. This board must have power to raise funds for the support of the

work, either by special tax or otherwise, appoint a health officer and remove him for just cause, and with his advice and consent appoint such public health nurses and other assistants as are necessary. The chief health officer should be the executive officer of the board and upon him, and not on the board, must be placed the responsibility of enforcing all local and state health regulations of the district.

During the last two years five different states have passed laws authorizing the organization of local health districts by coöperation of neighboring towns, villages, and cities. In Illinois a petition signed by at least 5 per cent of the voters of the district must be presented to the county clerk, who then has a special ballot prepared for the next regular election and the question is submitted to a vote of the people. If a majority in each town vote for the proposition the district is organized and the supervisor from each town, together with the chairman of the county board or supervisor, is the board of health. The board has some legislative authority, has power to levy a special tax not to exceed four mills on the dollar, may receive donations, and shall appoint the chief health officer from a list of eligibles prepared by the State Department of Health by a competitive examination.

The health officer is the executive officer of the board of health and it is his duty to enforce and observe the rules, regulations, and orders of the State Department of Public Health and all state laws pertaining to the preservation of the health of the people within the public health district. He is further charged with the duty of executing and enforcing within his district all city, village and incorporated town ordinances relating to nuisances, public health and sanitation. He exercises the rights, powers and duties of all township boards of health and county boards of health within his district and has the power to investigate the existence of any contagious or infectious diseases and adopt measures to arrest the progress of the same; and to make all necessary sanitary and health investigations and inspections within the district. He must devote his entire time to his official duties and the salary which is fixed by the board of health must be at least $1,500 a year.

The Massachusetts law permits two or more neighboring towns to form a joint committee composed of the chairman and secretary of the board of health of each of the towns, and this committee may appoint a health officer to act for the entire district.

Under the New York law the state health commissioner is empowered to create a local health district on the request of the town board of any town and the board of trustees of any village and the common council or other like authority of any city. The board of health for the district consists of the supervisor of each town, the president of the board of trustees of each village and the mayor of each city included in the district. All town, village and city boards of health within the district are abolished upon the formation of the consolidated health district, and their powers and duties are con-

ferred upon the board of health of the district.

In California a local health district may be created by the board of supervisors of the county in which the proposed district is situated, upon the presentation of a petition signed by at least 10 per cent of the voters of the district. There is a board of trustees consisting of one member from each unit of unincorporated territory, appointed by the board of supervisors, and one from each incorporated city or town, appointed by the local governing body thereof. The board is given all necessary powers and is authorized a levy a special tax not to exceed two and one half mills on the dollar.

The Michigan law permits the erection of local health districts by the union of neighboring townships and villages, but it appears that incorporated cities may not be included. A petition of not less than 15 per cent of the qualified voters is presented to the village or township board, who then place the question before the people at a general or special election. If a majority of all votes cast in each township and village to be included within the health district is in favor of erecting the health district, the same is then declared to be created by the county board of supervisors. Each township board and each village board elects one member to act on the district board of health. The district board of health is given the necessary authority to carry on public health work and appoint a health officer, and is required to submit to the township board, annually, an estimate of the amount necessary to carry on the work of the district health department.

The minimum requirement for a coöperative health department that is to serve a number of small communities depends somewhat upon the size of the population and the area of the district to be served. In districts with a small population, ranging from 15,000 to 20,000, it may not be possible to get more than a full-time health officer and a school nurse. There should, however, be a fairly well equipped office with a desk, filing cabinets, telephone and the necessary record cards and other stationery, and a properly equipped bacteriological laboratory, because in such a small department the health officer must do the necessary bacteriological work and serve as milk inspector. In some cases it may be necessary for him to do something with dairy inspection and it would, therefore, be necessary for the department to make some kind of provision for transportation. In districts having a population of 30,000 to 50,000 there should be a chief health officer, an epidemiologist in charge of contagious diseases and the bacteriological laboratory, a sanitary inspector, several school nurses (at least one for every 2,000 school children), a stenographer and office attendant and at least a part-time dairy inspector. The expense of maintaining such a department runs from $12,000 to $15,000 a year, or from 30 cents to 40 cents per capita and can in most cases be raised by a three mill tax.

As far as I am aware there are but two coöperative health departments

in operation in this country. One of these is at Wellesley, Needham, Weston, Framingham and Belmont, Mass., and was put in operation in 1913 through the efforts of some of the members of the teaching staff of the Massachusetts Institute of Technology. The other is at LaSalle, Peru and Oglesby, Ill., and was organized in the fall and winter of 1913–14 by a gentlemen's agreement between the mayors and city councils on the one hand and a public spirited citizen on the other, who agreed to furnish the necessary funds, provided that the cities would accept the services of the department when put in charge of properly trained men, and give them their moral support. The cities at present pay nothing toward maintaining the department except the salaries of two sanitary officers, one for LaSalle and one for Peru, and they agreed to provide for garbage collection. Our staff consists of a chief health officer, an assistant health officer on part time in each of the three municipalities, a bacteriologist, a laboratory helper and janitor, three school nurses, one infant welfare nurse, a part-time dairy inspector and the two sanitary officers just referred to. The expense of maintaining the department is approximately $17,000 a year, and we serve about 30,000 people.

LaSalle, Peru and Oglesby, Ill., are three small manufacturing cities with 12,500, 8,900 and 4,600 inhabitants, respectively. They are located in LaSalle and Peru townships, which have a joint area of thirty-six square miles. The entire district is thickly settled as there are several settlements of one hundred or more families just outside the city limits. LaSalle and Peru adjoin one another and Oglesby is four and one-half miles south of LaSalle, across the Illinois River. The population is made up chiefly of foreign laborers who are employed in two zinc refining plants, three cement mills, a number of coal mines, a wheel and plow factory, a clock factory and several smaller industries. The population of the entire district numbers approximately 32,000.

Before the establishment of the coöperative health department these communities had no more in the way of machinery for public health administration than most other small cities of that size. Each of the three municipalities had a part-time health officer, two of whom were paid $25 a month and the other $35. With such small remuneration not much service could be expected and of course nothing was done in the line of milk and dairy inspection, medical inspection of school children, epidemiological investigations and collection of morbidity and mortality statistics. Quarantine regulations were very lax and were constantly being violated and not infrequently smallpox patients were walking the streets without apparent restrictions. Diphtheria patients were nearly always released from quarantine as soon as the membrane had disappeared, often within one week from the time of onset, or whenever the attending physician told the health officer to release the case. No cultures were taken either for diagnosis or for release. Scarlet fever patients were quarantined only from two

to three weeks and were not seen by the health officer before being released. As a consequence epidemics of diphtheria, scarlet fever and smallpox were of frequent occurrence.

With the inauguration of the cooperative health department most of these conditions were radically changed. Practically all diphtheria cases are diagnosed culturally and none are released from quarantine until two negative cultures from both throat and nose have been obtained by the health officer or the assistant health officer, on two consecutive days. Scarlet fever patients are quarantined for a minimum of five weeks but are not released until inspected by a medical officer from the health department. Epidemiological data are collected on practically every case of diphtheria, scarlet fever, smallpox, typhoid fever and acute anterior poliomyelitis, and instructions are given in regard to the care and disposal of bodily discharges.

LaSalle had a milk inspection ordinance but nothing was done under it except to make a butter fat test once a month on samples that often were brought in by the dealers on request. We, therefore, had a uniform milk and dairy inspection ordinance passed in the three cities and now all dairies are inspected and scored every three months by a veterinarian, and samples of milk are collected from every dealer twice each month for bacteria counts and for the determination of butter fat and solids. Nearly all milk is now delivered in steam-sterilized bottles and approximately two thirds of it is pasteurized, whereas formerly most of the milk was dipped from cans on the wagons and, of course, was not pasteurized. All dairy cows were tuberculin tested and all reactors have been disposed of from those herds whose yield is not pasteurized. About once each month samples are collected from each producer when he delivers it at the bottling station and if the tests are not satisfactory the matter is talked over with him in an endeavor to get an improvement.

All grocery stores, meat markets and restaurants are inspected and scored every three months and recommendations made for improvements. A vigorous campaign was instituted three years ago against the outdoor privy nuisance and has resulted in the abolishment of two hundred and fifteen of the three hundred and eighty-eight nuisances of this character that were found in an area of one hundred and eight blocks right in the heart of LaSalle. Two prosecutions had to be instituted and were successfully carried through in order to get this result, but the work is not yet completed.

The school children in both public and parochial schools are given a careful passing inspection at the opening of each school term, three times a year. All schools are visited at least twice every week by one of the nurses for the purpose of finding cases of contagious diseases. All cases of sore throat are cultured and sent home to await the results of the culture, or to await further developments if scarlet fever is suspected. Whenever diphtheria breaks out in a room cultures from both throat and nose are taken of every pupil and the room dismissed

until the results of the culture can be learned, and the desks and doors can be washed off with a disinfectant. Absentee visits are made in the homes whenever there is a suspicion that the child is ill, and in this manner nearly half of the cases of contagious diseases among school children are found before they had been reported.

Physical examinations are made of all school children in the second, fourth and sixth grades each year so that each child is examined every other year. Records are kept of all examinations and the parents notified of all defects which appear to the inspector to be serious enough to require dental, medical or surgical treatment. These cases are followed up by the nurses to interest the parents in the child's ailment and get treatment. Last year about 55 per cent of the cases of defective vision received attention; 20 per cent of those who were recommended for treatment of the tonsils were operated on (57 out of 275) and 26.9 per cent of those recommended for dental treatment received such attention (511 out of 1,900); 214 of the latter received their dental treatment at the free dental clinic which was established just a year ago, and is operated in connection with the central office and laboratory building of the health department. The dentist is paid for his time but puts in only two half days a week. The school nurses are charged with the duty of bringing enough children each half day to keep the dentist occupied every minute for which he is paid.

One nurse devotes all of her time to infant welfare work and prenatal instruction and is doing excellent work. With a total of six hundred and nineteen births reported last year we had recorded fifty-five deaths of infants under one year of age, giving us an infant mortality rate of 8.88 per hundred births. Through a plan of coöperation with the local anti-tuberculosis society, one of the nurses is devoting half of her time to anti-tuberculosis work and receives half of her salary from that society. The remaining half of her time is given to school work in Oglesby.

A small, but first class, fire-proof isolation hospital is in process of construction, and will be finished within three months. It will accommodate about twenty patients when finished and costs approximately $42,000, completely equipped, and is a gift to the community.

The death-rate for the entire district last year was 12.63 per thousand and the year before 13.19. There were twelve deaths from the acute communicable diseases, diphtheria and scarlet fever, in the entire district, whereas the year before there were sixteen and three years ago forty-seven.

*

Medical Secretaries.—Simmons College announces the graduation in May and June of specially trained women to serve as secretaries in hospitals and dispensaries, or to private physicians. Their training includes all the technical secretarial work and in addition a knowledge of medical terms, scientifice German and general and special science as applied in the diagnostic laboratory.

RURAL HEALTH ADMINISTRATION UNDER THE STATE HEALTH DISTRICT PLAN.

DR. FREDERICK W. SEARS,
Sanitary Supervisor, State Department of Health, Albany, N. Y.

Read before the Public Health Administration Section, October 17, 1917, at Washington, D. C.

IN SO short a paper, I will not take the time to go into details of the organization of the New York State Department of Health, as constituted by the Laws enacted in 1913, but will confine my remarks principally to certain features of its operation which have most impressed me in my experience of three and one-half years, both as a state sanitary supervisor and as a health officer of a second-class city. I will say, however, that I believe no one who has observed its workings and the results of the present system by our chief, Doctor Herman M. Biggs, would be willing to adopt at the present time, any other system.

The placing of the responsibility of administration in the hands of a single individual, who is given full authority of enforcing its regulations and provisions, is along the line that makes for efficiency in all great enterprises.

Quick decisions and prompt action in conditions of extreme urgency, can only be obtained under such a plan.

As essential as are advisory boards in assisting in the formation of suitable regulations regarding the activity of various departments and separate units of the system, the best results have not been attained when such boards have assumed the executive function. Under the New York State system, the Public Health Council, of which the state health commissioner is a member *ex-officio*, has been given the authority to formulate regulations for the guidance in matters of public health; such regulations, having the force of law without the necessity of being submitted to the state legislature, have demonstrated the wisdom of such a plan.

It requires no argument to convince this body that a public health council, which is selected from men eminent for their attainments in the various fields of public health work and of which the chief executive is a member, is more capable of fixing the minimum requirements for public health administration, than is a legislative body to which few physicians aspire, and fewer are elected, and that few rarely, if ever, selected for their knowledge of sanitary science.

Many physicians of the highest attainments along other lines are too frequently sadly lacking in their knowledge of public health work. Legislative enactments are too slow in their development, and often too cumbersome in their interpretation to meet the needs of a science which must be elastic in its adaptation and extremely progressive in its application.

The frequent meeting of the Public Health Council enables that body to be ever ready to meet emergencies, and to modify existing regulations as is necessary to meet ever changing condi-

tions. This body, fixing as it does the minimum requirements in the ordinary public health administration, such as the control of communicable diseases, the regulation of the production and sale of milk and its products, the defining of nuisances and the methods for their abatement and many other important regulations, does not interfere with progressive communities going beyond these requirements, but does prohibit them from making less stringent rules, thus giving to the state certain standards of uniformity.

Furthermore, the placing of competent men at the heads of the various divisions who are able to concentrate their energies in that one direction, and who are always at the command of the chief executive of the State Department, is a most essential provision.

Public health work is too comprehensive to expect any one man to work out the details of the management of all of its various branches, including as it does laboratory research, vital statistics, communicable diseases, child hygiene, sanitary engineering, etc.

Yet, as essential as are the functions of all this central administrative body, its efficiency would be greatly restricted were it not for the field force represented by the district sanitary supervisors and diagnosticians who are in constant touch with this central body on the one hand, and with the local health officers of the ultimate districts on the other hand.

We will not stop to compare all results with other methods, and to give the details of the operating of such a system, but shall confine ourselves largely to the effect of this system upon the local health units, as represented by the health officer and the local boards of health.

Much has been written of late on the advisability of establishing full time county health officers by legislative enactment, and wiping out the local health units, as they now exist. I am not in favor of such a plan. I am convinced that the inefficiency in the rural health unit administration in the past has been due to the old village system, or I might say, of entire lack of system. Under the old plan, the local health officer was confronted with almost complete isolation from the central body, and, in a great proportion of instances, by the indifference of the local board of health which rarely ever met to consider health matters, or to offer him any encouragement. This, with the constant rebellion of some of the members of the community, whose so called personal liberties he was required to restrain, in enforcing the health regulations, and with this, a disinclination to allow him any compensation unless an epidemic of some disease occurred in the community. As one member of the local board expressed to me, he saw "no reason why a health officer should be paid when there was nothing to do," implying that there was nothing to do, except when an epidemic did occur. Under such an environment, the most sturdy heart loses its enthusiasm and incentive. The effect has been that the health officer has been blamed for conditions which under other circumstances would not have existed.

I have been long convinced that health administration does not meet its highest attainments through police methods of enforcement, but rather through education and coöperation of all the local forces which he can bring to his command. The local physician in most communities is a highly respected citizen to whom many go for advice, not confined to medical subjects, and under proper guidance and assistance the local health officer becomes a powerful factor in securing the educational and coöperative methods needed. I believe it would be wrong to eliminate by legislative enactments this vital force.

The district sanitary supervisor, if at all tactful and diplomatic, can familiarize himself with the needs of each one in his district. To bring about this desired coöperation, the sanitary supervisor, if necessary, may assume for the health officer the responsibility of enforcing a needed regulation upon some rebellious family, or it may be upon a favored patient whom he does not wish to offend. The sanitary supervisor should be ever ready to give advice in the application of the various Code Regulations, as prescribed by the state commissioner, and also by meeting the district boards of health to explain to them the need of greater activities in the prevention of disease. We must teach these boards of health that the function of the health officer is not primarily to fight epidemics, but to prevent their visitation upon the community.

In the writer's experience, local epidemics, except possibly those which are caused by water or milk infection, are not of sudden development, but are developed not unlike some diseases which may become generalized from neglecting to care for the primary invasion. They are largely due to the development of disease carriers, the result of neglecting to manage the advent of isolated cases; thus showing indifference to their presence until such foci have become so numerous and so widely distributed, that all that is required for the disease to assume epidemic form is to bring those various localized carriers in proximity to those who are susceptible to that disease, as for instance in schools, Sunday schools, and other public gatherings.

The system of rigorous school inspection at the beginning of the school year in search of these carriers is one of the very best methods of preventing epidemics.

Under the present district system, I believe the time is not far distant when epidemics of communicable diseases, if not a thing of the past, will be of extremely rare occurrence.

By the prompt reporting of all communicable diseases to the State Department, either by card or by telegram or telephone, in the more urgent situations, the sanitary supervisor, who is in constant touch with the heads of the various departments, can be immediately notified, and prompt action taken.

By tabulating all of these diseases and sending them to the sanitary supervisor in weekly charts, a system of spot maps can be made which will acquaint him at a glance with the condition in his various units, and their relations one to another. To my

mind, one of the greatest achievements of the present administration is the improved Vital Statistics Record, the more uniform regulation in the production and distribution of milk, and the lowering of infant mortality throughout the state.

One of the most progressive steps recently taken by the public health council, and the one which is to gradually eliminate politics from public health activities and to bring about the attainment of full time health officers, is to the writer's mind the establishing by that council the qualifications necessary for the appointment of local health officers, and the requiring of all local health boards to select the health officers from those whose names have been certified as meeting these qualifications. To this end, the State Department has prescribed certain courses of instruction which, in its judgment, will best fit the health officers for their duties.

By this method the efficient, interested health officers are stimulated to greater activities, and their field of work is gradually extended by the elimination of the inefficient and indifferent health officers, until the desired result is obtained.

By this process of evolution, we will bring each local community to a higher view of the value of the health officer in the prevention of disease, and will have secured the coöperation not only of his local board but of the members of his community as well. This method, to the writer's mind, is superior to the proposed legislative methods referred to, which prevent coöperation by the production of a feeling of resentment so often met with in rural communities, by what they term unnecessary interference with conditions which should be met locally.

In January, 1916, it was the writer's great privilege to receive permission from the State Public Health Council to put into operation, in connection with Syracuse University, a course of study for local health officers which he had suggested to that council as in his judgment best meeting the requirements of his district. This course of instruction consists of four months' reading and of twelve weeks' part reading, with two days a week devoted to residence work in Syracuse, in practical instruction and demonstration.

This course was started in February, 1916, and so far we have conducted four classes of an average number of twenty for each class. Certificates have been granted to the members of these classes after they have passed a written examination. About seventy-five acting local health officers have earned these certificates. Of necessity, on account of having to meet two days a week, the radius over which such a course can be extended is limited on account of the sacrifices in time and money that is expended in traveling long distances each week, and in order to meet this situation other similar units will be necessary in other parts of the state. Two other unit systems have recently been started, one in Albany and one in Buffalo.

The effect of these courses has been highly gratifying. The local health officer has been stimulated to higher

activity and incentive, and in many instances has gradually extended his activities, and in nearly all instances has secured the coöperation of the local boards of health and of the various organizations in his local community.

The health officer has thus become an active agent in securing better equipment and greater facilities for the combating of disease. In many localities the local boards have shaken off their previous indifference, and have become interested to the extent of paying the entire expense of their health officers who have taken these courses, and, in at least one instance, of purchasing the text-books for his immediate use.

As an illustration, in one small town in my district a health officer had, under the old system, become perfectly indifferent to all public health work. He took the prescribed course in Syracuse about a year ago, and at the present time is the health officer of three towns and is also acting health officer in a neighboring village, and is doing good and efficient work.

It is expected that by this method the time is not far distant when there will be a great diminution in the number of health units throughout the state, a condition already quite marked, and that we will have brought about the larger district system by having stimulated local communities to greater assistance along these lines, through educational methods.

In many instances the health officer has already secured the coöperation of the various local organizations, such as the local Grange, the various Women's Auxiliaries, Labor Unions, and other active bodies.

It is self evident that to carry on such a comprehensive system as is now in effect in New York State, sufficient appropriation must be made by the legislature to make it effective, and inasmuch as the legislators are governed chiefly by the public sentiment of their local constituents, this will result as a natural consequence, and is, I believe, being brought about in New York State in a very satisfactory manner.

It has in former times been a reflection upon our legislative bodies that they have, as for instance, devoted 23 per cent or more of the entire budget of the state for the maintenance and care of the insane, and have at the same session appropriated 1 per cent or less not only for the prevention of insanity but for all public health activities combined.

For the details showing what has been accomplished in the nearly four years in which this system has been in force in New York State, I must refer you to the records of the department, but in conclusion I will say that we believe they are most gratifying as administered under our present leader, who has the faculty of maintaining such a splendid *esprit de corps* and efficient service throughout the entire organization.

HEALTH PUBLICITY AN AID TO COÖPERATION BETWEEN HEALTH DEPARTMENT AND CITIZEN.

JOHN W. TRASK, M.D.,
Washington, D. C.

Read before the Public Health Administration Section, Washington, D. C., October 18, 1917.

THE work of the health department has for its purpose the maintenance of the physical well-being of the community. There are available to the department three principal fields of action.

General sanitary projects can be installed, such as a safe water supply and an adequate sewerage system Measures can be carried out, such as the regulation and control of milk production, handling and sale, the disposal of stable refuse and materials in which the larvæ of flies develop, and the drainage or other treatment of accumulations of water in which disease-carrying mosquitoes breed. These give an important element of protection to the entire population and while they can be carried out without particular coöperation on the part of individuals, the support and endorsement of the community are essential.

Then there are other measures more personal in their application, such as the control of foci of communicable diseases and the regulation of industrial conditions and of housing. These require to a considerable degree the intelligent coöperation of the individuals concerned.

Finally, there is the broad field of personal hygiene which depends practically entirely upon the knowledge possessed by the individual and upon his habits of life. The health department is powerless in this field except through its influence as a teacher of hygiene.

All measures for the protection of the health of the population depend primarily upon the citizen's desire to maintain the physical well-being of himself and family and his understanding to a degree the means by which this can be accomplished. Even the installation of such a project as a proper water supply depends under a democratic form of government upon the desire of the community to have such a supply and its willingness to be taxed to meet the necessary cost. The extent and results of communal health activities are essentially the product of the sanitary and hygienic sense and desires of the citizens of the community. Progress in communal hygiene and sanitation therefore depends upon the education of the citizen in matters pertaining to community and personal hygiene. The real question at present is not whether attention should be given to education, but how the education can be best accomplished. The matter is one which, because of its underlying importance, merits the most careful consideration.

Instruction of the people in the principles of hygiene and sanitation is instruction in how to live successfully and is fully as important as instruction in reading, writing, and arithmetic.

The dissemination of information on matters relating to hygiene is not strictly administrative health work. In a way it is nothing but education of the most important and practical kind. The time and place best adapted to the teaching of these things would seem to be childhood and the school. The child has a receptive mind, while the adult is likely to have erroneous ideas which are replaced with difficulty. The adult is not readily taught. Instruction in hygiene and sanitation should certainly be begun in the grammar grades at school. This could be supplemented by regular courses given in the high schools by representatives of the health departments properly qualified to give such courses. Furthermore, a college curriculum without a good course in the principles of hygiene and sanitation should be a curiosity and the subject of criticism. Every medical school might well give a good course in hygiene. One might even expect every medical school to give as thorough a course in what we are accustomed to term "preventive medicine" as it does in anatomy or the practice of medicine or surgery. The physician has greater and broader opportunities of using a knowledge of hygiene and sanitation than has the lawyer or engineer and he should be better informed on the subject. The program being inaugurated in New York State providing for physical training and health education in the public schools is a most important step forward.

Family magazines and educational periodicals could increase their usefulness by maintaining well edited departments for the discussion of matters relating to personal and community hygiene. In newspapers the health column might well be as indispensable as the joke column.

Up to this point we have been discussing the wider dissemination among the people of knowledge of matters relating to sanitation and hygiene, the education of the citizen in personal and community hygiene. This may not be considered as administrative health work. It probably is not. There is, however, a kind of educational work, better called publicity, which is strictly a part of administrative health work. Reference is made to the kind of publicity which keeps the community informed as to what the health department is doing and the duties and responsibilities of the citizen in relation to the work of the health department. This publicity is essential to and is a part of successful administrative health work.

There is no surer way to get the support and coöperation of the people than by keeping them informed as to just what the health department is doing and what it is attempting to accomplish. Keeping the public informed as to what the health department is doing, what it is attempting to accomplish, and why, has an educational effect, arouses an interest in the health department and gains for it the intelligent support of the community.

The proper function of the health department is of such importance to the welfare of the individual and the family that one may properly expect all but the most stupid and ignorant

to be vitally interested in it. This relationship between the community and the health office is only occasionally found. What is the reason—are the health departments at fault, or are the people blind to their own welfare? Is the health department really an unimportant part of the community government, or is it merely that the average individual cannot see its importance? Probably in many instances the health department is at fault and sometimes the people are blind. In many instances the health department as organized and run is an important factor in the community government. In other instances it is not. The conditions are likely to constitute a vicious circle. The community provides poorly for health protection and the poorly equipped and inadequately trained health department gives poor service.

It is interesting to consider in what connection the average citizen thinks of the health department. Is it not too frequently in connection with bad smells, leaky plumbing, the neighbor's chicken coop, or some other fancied nuisances apparent to the senses? The citizen thinks of the health department in connection with these so-called nuisances because these are the things with which health departments in many places have identified themselves in the past.

During the last decade health agencies have wisely spent much effort in educational propaganda of various kinds. Frequently the main effort has been devoted to sanitary education and little attention has been given to publicity of the actual work being done. There are many happy exceptions to this, however.

All efficient health departments now use spot maps for the purpose of showing graphically to the department staff the distribution of communicable diseases, of surface wells, of privies, and other health factors capable of such graphic representation. The citizen has almost as great an interest in the whereabouts of cases of communicable diseases in a community and of conditions menacing health as has the department staff. This is especially so of households with children. People may be told the way in which typhoid spreads. They may even know that there is a case in the next block. But all this makes little impression. One seldom sees many cases of a disease and is therefore not impressed. The spot map in a way lets the observer see all the cases of typhoid fever in the community at a glance. It shows him where they are and how grouped. It will show the number and distribution of surface wells and cesspools. Maps tell a story that it is impossible to tell by word of mouth or printed page.

The Weather Bureau carries its message largely by the weather maps. It makes a continuous exhibit by the use of kiosks in cities and bulletin boards elsewhere. The health department might also reach the people by disease maps and sanitary maps of various kinds. It can create an interest and impart useful information by means of the spot map. It might display maps in public places—maps showing the distribution of typhoid fever, of diphtheria, of infantile paralysis, of surface wells, and cesspools—maps that could

be changed daily or weekly, or at less frequent intervals, depending upon the material concerned. There are several processes by which such maps could be reproduced. They might be published in newspapers and in department bulletins.

It is believed that such a practice, if followed, would effectively spread information regarding existing conditions because it tells its story at a glance without the effort or expenditure of time required in reading a printed statement. Greater use can be made of this means of education than is made at present. The world is so flooded with printed matter that few find time to read any except the things pertaining to already developed interests. Maps are of such a nature that they carry conviction. They tell their story without the expenditure of time or effort and impart information most likely to arouse an interest in health matters—an interest in that side of health work shown with difficulty otherwise than by maps. They cause the community to associate the health department with its real work, disease prevention. The use of maps is mentioned merely as an illustration of the part graphic methods may play in giving publicity to concrete things relating to the actual work of health departments.

No health department can be really successful without the intelligent support and backing of the community. Publicity regarding its actual work is an essential factor in gaining such support and backing. The facts are that the average community in the aggregate is neither stupid nor indifferent to its welfare as regards health protection. And where health departments do not gain the adequate support of the people it is undoubtedly because either they do not merit it or they do not make use of the right kind of publicity.

KEEP it COMING
"We must not only feed our Soldiers at the front but the millions of women & children behind our lines"
Gen. John J. Pershing
WASTE NOTHING

MOSQUITO CONTROL IN NEW JERSEY.

RALPH H. HUNT, *Major, M. R. C.*

Read before the Sanitary Engineering Section, American Public Health Association, Washington, D. C., October 18, 1917.

ONE scarcely needs to give a reason for attacking the mosquito problem in New Jersey.

The literature from early colonial times down to recent years is filled with references calling attention to the baneful influence of the mosquito. Not only has it rendered the lives of citizens intolerable at certain seasons of the year, but it has hindered industrial development and depreciated property values computed by millions.

Thousands of acres of good arable land lie fallow because of the presence of this pest. Many places, attractive otherwise for human habitation or industrial purposes, are rendered unhabitable. Men and beasts of burden are unable to live in comfort and perform their labors.

The work of mosquito control was sporadic until 1912, when the present County Commission Law was placed on the Statute Books. This law gave a non-partisan personnel, and an appropriation based upon ratables. It made the giving of the funds mandatory upon the County Boards of Freeholders, after the budget had been approved by the director of the State Experiment Station.

The county unit was adopted because it seemed to offer a large enough unit for effective work. When one is dealing with a pest the range of flight of which varies from a few hundred yards to forty miles, the reason for a large unit is evident. If any change were to be made we all feel that the unit should be made larger. For example, the Newark Bay Marsh, containing twenty-nine thousand acres of salt meadows, lies within five adjoining counties, each capable of feeding a brood of mosquitoes into the other. It is easy to understand that if one of these counties fails in its work the beneficial effects of conscientious work in the adjoining counties would be more or less nullified. Our own opinion is that more effective work could be done were the whole area in question placed under one responsible head. There are many reasons why this has not been done up to the present time, but it must come in the near future.

It is a cardinal principle of the fight against any pest that there must be as perfect a knowledge as possible of the habits and life history of the insects in question and the effects of environment upon it. Many questions have been answered in regard to the breeding places, effects of temperature, salinity of the water, the effect of pollution with sewage, the range of flight, of the different species, the life history of the larvæ and adult forms, also the effect of natural enemies.

We will first take up the salt marsh varieties—Aedes Cantator, and Aedes Sollicitans. These breed in the brack-

ish waters of the salt marsh. These mosquitoes are the ones which have given New Jersey its reputation as the Mosquito State. Formerly they appeared in vast clouds. Their range of flight has been determined with a maximum of forty miles, and an average flight of ten to twelve miles. They travel easily against a light wind. It is our experience that after breeding they immediately seek the upland. They do not enter houses, as a rule, and are not troublesome in the day unless disturbed. Between the hours of six in the afternoon and nine at night they are most active. It is these mosquitoes which are so troublesome out of doors, on the farms, in the garden, on the verandahs, and golf courses.

Their range of flight is easily determined, as we have only to ascertain the distance of the nearest salt marsh to the point of capture. These marshes are intersected by tidal creeks. After many years of investigation and experiment we have come to the conclusion that with a system of dikes, tide gates, and ditches these meadows can best be controlled. This method in effect shuts out the tide and gives drainage to the water coming down from the upland. In our county we have dug 1,800,000 feet of ditches, have built eight miles of dikes, and have installed as many tide gates as are necessary to control the tidal water.

There are many difficulties to overcome in such work, but we believe this to be the proper method for controlling the salt marsh. Of Nature's aids in the salt marsh work we have the ever present Killie fish. It does not do to exclude their aid nor to rely too much upon it. It is also found necessary to establish a circulatory system behind the dikes to prevent stagnation of the water. Many times we find breeding in these ditches but this difficulty is being overcome by the above method and temporarily by oiling.

The eggs of these varieties are viable in the mud for several years so that a meadow safe one year without reinfection may give trouble in later years.

The degree of salinity of the water seems to be the determining point in the particular species which is present. Aedes Cantator breeds in a slightly saline water while Aedes Sollicitans on the other hand requires a high degree. This is borne out in our findings on the marsh. Those parts of the marsh bordering the upland and far removed from the salt water give us the Cantator, while those sections of meadow with easy and short access to it give us the Sollicitans. This point has a practical value in the methods of control.

The next important variety is the Culex Pipiens or Fatigens—the house mosquito. This is a general breeder requiring fresh water but otherwise it is not particular. It breeds in brooks, rain barrels, catch basins, tannery vats, roof gutters, open pools, on the top of piled up beer barrels, and, in fact, almost anywhere. One of its favorable breeding places is water contaminated with sewerage.

Formerly it was thought that this mosquito had a very short range of flight. By means of collections on the wing we have several times traced the

flight of this mosquito in large broods for a distance of six miles.

Another fact ascertained is that this variety will breed in waters on the salt marsh near the upland of a low degree of salinity, if it be contaminated with sewerage. Until this fact was ascertained we were unable to control the pests of Pipiens in our county.

Both in Hudson and Essex counties raw sewerage is allowed to pollute the salt marsh near the upland.

In detail the method of determining the flight of this mosquito is as follows. Inspectors are placed in the early evening along lines running in different directions and the point of intensity is determined by the number of mosquitoes taken. The intensity increases as you approach the point of origin and thins out in all other directions.

Next in frequency we have to deal with the woodland and swamp varieties—Aedes Sylvestris and Canadensis. They are the most difficult to control. During the present year an unusual flight of Sylvestris occurred. It was traced, as in the case of Pipiens, by collections on the wing and its greatest point of nuisance extended for ten miles.

It has long been a belief of the writer that when local conditions are fairly well cared for; a severe infestation of mosquitoes always indicates a large area of breeding probably located at a distance. In dealing with severe infestations of mosquitoes it is our belief that preventative work must be done at a distance from the point of nuisance commensurate with the flight of the infesting mosquito.

As to the cost of the work for the past year our appropriation was $60,000 for the county of Essex. Our population is approximately 600,000 and the per capita cost .0916 cents. The cost per square mile was $417.50.

As to results: the Pipiens or house mosquito is under control in the country. The salt marsh varieties are a pest only at times of very heavy rainfalls and high tides of several days duration. The woodland and swamp mosquitoes are at times troublesome and are a problem yet to be solved.

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The Fundamental Requirements of Energy for Proper Nutrition.—"The *basal metabolism* is the amount of heat, as measured in calories, which is produced by an individual lying in bed completely relaxed, at which time the oxidative activities are at their lowest ebb." When a man stands upright or sits in a chair his *basal metabolism* is increased 10 per cent. A soldier walking at the rate of three miles an hour requires an additional 1.1 calories to move a pound of his body through this distance each hour. The extra calories per hour attributable to occupations of men are: Tailor 44, bookbinder 81, shoemaker 90, metal filer and hammerer 141, painter of furniture 145, carpenter making a table 164, stonemason chiseling tombstone 300, man sawing wood 378. The *basal metabolism* of women is: 37 calories per hour per square meter of body surface, or 93 per cent of that of men, measured by the same standard. Here again is added 10 per cent for standing or sitting during a period of sixteen hours a day. To this result is added the extra calories per hour according to the occupations of women (table omitted). Under-nutrition reduces the basal requirement of energy which may largely economize food, but to accomplish a given amount of work a fixed amount of food-fuel is required, irrespective of the nutritive condition of the body. "It may become necessary for Americans to 'train down hard' as people in the warring nations of Europe are forced to do, and it is important to realize that this may be done without detriment to health." —Graham Lusk, *J. A. M. A.*, March 23, 1918, pp. 821–824.

THE SANITATION OF SWIMMING POOLS—PRELIMINARY SURVEY OF LOCAL CONDITIONS.

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and
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SWIMMING pools are steadily increasing in favor throughout the whole country but knowledge of their sanitation has not been spread with equal rapidity. Although this growing popularity leads to increased interest in sanitary conditions which prevail in the pools, yet those most interested, in many instances, have never given much attention to practical control. Possibly this is because of the seeming incongruity on first thought of hygienic dangers lurking in institutions so hygienically approved as a swimming pool.

The bath houses of ancient Rome contained pools which could accommodate hundreds. They fell into disfavor, however, but whether due to the possibility of the spread of disease through their use, or the supposed effeminacy resulting from the relaxation of a hot bath, or the immorality connected with them, is not settled. Pools were in use at various times from then on, according to various historians. In 1846 the Bath and Wash House Act in England gave rise to the various public baths and public swimming pools in that country. The fast increasing number in the United States are probably an outgrowth of that legislation. We find, in addition to public swimming pools and bath houses, plunges in almost every club, college, Y. M. C. A. or like institution in the country. They are also being installed in hotels, schools, private homes, ocean steamboats and, in fact, any place where people congregate. In many places the authorities are considering making compulsory the use of pools and the learning of swimming. This will make a serious duty of their sanitary supervision and doubtless result in holding those authorities responsible for any transmission of disease which may result from their use.

No purpose of establishing municipal control of the conduction of swimming pools was in our minds when the present study was undertaken in St. Paul, although we realized that eventually such municipal supervision would be necessary, and agree with Lyster (Jour. Am. Med. Assoc., 12–10–11) that tanks should be under local supervision of the health officer just as much as ventilation of buildings. In St. Paul the swimming pools exclusive of those in private residences now number seven, and in the past few years scattered samples of water collected in various ways and at various depths have been brought to our

laboratories by those most interested. The results of their examinations were so varied, and so at variance with what we were led to expect, that we determined upon a thorough and systematic routine examination of all which we could reach, to present a survey of conditions as they now exist.

Available literature has been consulted freely to establish some sanitary standard as a basis for our work but without success. It is only during the last ten years that there has been any attempt towards the sanitary control of swimming pools and while articles have been written on the sanitation of them, they have been infrequent. The methods of examination described show a lack of uniformity and no standard has been established of purity although the ideal of one similar to that for drinking water has been suggested.

We have reviewed the literature somewhat thoroughly here with an idea of bringing the subject to public discussion as a provocation of increased study of some of the necessary sanitary factors of preventive medicine.

That bathing in polluted waters may actually spread disease has been shown by Aiken (Proc. Ill. Water Supply Assoc., 1911) who has probably definitely settled the controversy which had existed on that point. As a result of his statements many cities situated on polluted rivers have closed bathing beaches which they had on them or have replaced them with shower baths, obtaining their water from other sources or filtering and treating the more accessible river water before its use.

The forms of disease most easily transmitted by polluted water admit of classification most readily into three groups: intestinal, eye and ear, and venereal.

Intestinal.—Jager and Drescher have reported epidemics of proteus infection from bathing in infected waters at Ulmer on the Danube, and on the Neisse. Many other writers have reported enteric fever from bathing in polluted waters. Shiga reports an outbreak of 413 cases of dysentary which he concludes were due to the ingestion of river water by bathers, and others have advanced presumptive evidence that intestinal disease can result from bathing in polluted waters.

Eye and ear.—Eye infection among patrons of a public swimming pool is reported by Fehr. Trachoma has been reported spread in this way by Schultz. Cobb reports such transmission of ear infection.

Venereal Disease.—Gonorrhea, spread through the direct medium of a swimming pool, is reported at Posen by Skutch. Bending reports a less epidemic at a brine bath. That Bacillus prodigiosus can pass from the water into the vagina of women swimming has been demonstrated by Hertzka and Sticker.

Skin infections while not classified by Aiken are reported locally, as are nose and throat infections.

By far the most important diseases transmitted by swimming pools are those which affect the intestinal canal. The venereal group come next. The most important factor in the spread of disease is the presence of organisms and the determination of the number of

organisms present is the index of safety to the pool. Particularly important is it to determine the presence of intestinal bacteria such as Bacillus coli, typhosus, etc. We believe chemical analysis of pool water to be valueless in sanitary significance, as the organic matter added by each swimmer makes such analysis difficult of interpretation. In this regard pool water analysis differs from drinking water analysis.

The especial points considered in our survey were (1) Bacteriological Control, (2) Management of the Water, (3) Chemical Disinfection, (4) Construction and Equipment, (5) Administration, and (6) Cost. All the pools were supplied by city water and as St. Paul is blessed with an excellent water supply the factor of attention to the source of water was not considered. Literature shows the following views on these factors:

(2) Management of the Water.

Refilling.—Earlier writers considered refilling very important. Mannheimer has recently shown (Am. Phy. Ed. Rev., 1912, 17, p. 669) that there is no direct relationship between the number of weekly refillings and the sanitary condition of the water in a swimming pool.

Dilution is considered an expensive and efficient means of improving the sanitary condition of swimming pool water. (Mannheimer, ibid.)

Refiltration.—Angel concludes that this means improves the general appearance of the water, and also lowers the bacterial content of swimming pool water. It also reduces cost of maintenance.

(3) Chemical Disinfection.

Copper sulphate. The excellent results obtained in the destruction of bacteria and algæ in drinking water by the use of this substance have led to its use for the same purpose in swimming pool sanitation. Stokes seems to be credited with the first use of the chemical for this purpose in 1905. Recently Levine (Jour. Infect. Dis., March, 1916) has again demonstrated its efficiency. Thomas (Jour. Am. Med. Assoc., 9–25–15) says that .04 parts of copper sulphate per million of water used every day will keep a pool in sanitary condition. Others advocate larger amounts. The formula given by Thomas to determine the amount of copper sulphate to be used is based on .5 parts per million, which seems nearer the accepted standard.

The effects on the human economy of repeated small doses of copper sulphate is not thoroughly understood. The toxicity of blue vitriol in concentrated form is well known, however, and its use unless properly understood and carefully supervised should be deplored.

Calcium Hypochlorite, which is also spoken of as bleach or chlorinated lime, has long been used in purifying water for drinking purposes. In the last few years a dozen authors have advocated its use for swimming pools. The efficacy of this chemical depends on the liberation of free chlorine which is the germicide. The commercial preparations lack in stability and frequent tests must be made to determine the available chlorine. This ordinarily varies from 24 to 33 per cent according to sample. Tully (Am.

Jour. Pub. Health, March, 1912) recommends .5 parts hypochlorite per million of water, chlorine 30 per cent available. Others believe it necessary to use as high as 3 parts per million to sterilize a pool. The chemical is costly, at present the price is very high, so much so in fact that filtering plants in some cities find it cheaper to use tanks of liquid chlorine and chlorinating apparatus rather than add solutions of bleach to the water. Chlorine has also the disadvantage of being irritating to mucous membranes and consequently is unpleasant to patrons of the plunge. The hardness of the water also governs the amount of bleach to use. This is a simple chemical proposition as if there is a chemical combination of the chlorine, it is not available as a germicide. We are still at work to determine the correct amount of hypochlorite to use to obtain the best results in disinfection of pools supplied with local city water. We are also carrying on parallel experiments with copper sulphate.

(4) Construction and Equipment.

No architectural literature was consulted and no especial detailed study was made of construction. From a sanitary viewpoint the chief factors are: smoothness of lining, lack of obstruction to the water, surface overflow and life rail in combination, adequate shower and toilet facilities, large enough filtration plant, and laundry adjacent.

(5) Administration.

Mannheimer has found that the administration of the pool, inspection of bathers before entering the pool, and their instruction in swimming pool sanitation were the most important agencies in keeping the bacterial counts low.

(6) Cost.

This factor naturally enters to a certain extent in suggestions to correct conditions found, but should not be determinative as cost should not be allowed to endanger health. The aim should be to secure a sanitary pool at the lowest consistent cost.

In collecting samples we used a Rotschka rod of a special design and glass stoppered tincture bottles of 100 cc. capacity. Usual sterilization of the glassware was followed. In all instances the samples obtained were plated within one-half hour after their collection.

Although it has been stated that the samples from different parts of the pool vary very little in bacterial content, we collected samples in almost every instance from the top and bottom, shallow and deep ends of the pool for comparison and study. We avoided surface or bottom contamination by collecting about twelve inches above or below the actual bottom or top. It was interesting to note the difference in counts where the pools were idle and how quickly a few bathers stirred the entire tank to uniformity of count.

The methods of analysis we followed were those recommended by the Committee for Standard Methods of Water Analysis of the American Public Health Association. We determined the counts on plain agar; the number of acid colonies (gas formers) on litmus lactose agar, incubated forty-eight

hours; and presumptive for Bacillus coli in lactose bile fermentation tubes. We have examined the water for filling as it came from the city taps in every case as a control. Where possible we ascertained the actual number of bathers. Any interesting or unusual factor was noted. Over 150 samples were examined from the seven pools and two beaches, and supervision maintained from April until November.

Our report has been made as full as possible although in many instances desired data have not been obtainable. In some instances we did not find eager coöperation from those who had charge of the pools and in other cases we were forced to disbelieve statements of control which the supervisors made to us. The effort has been made to present a survey of swimming places in this city exactly as they exist as a basis for further studies in their sanitary control, as we recognize the incompleteness of this preliminary report.

For lack of space the itemized tabulations are omitted.

Local Summary.

The larger pools include three associational pools, one college pool and one charity. The smaller ones are in connection with bath and barber shops, the two beaches are well known.

The larger pools are well supervised and the various managements are anxious to do all in their power to maintain pools of the highest degree of purity. They are handicapped by not being able to secure help of very great intelligence nor those who appreciate the importance of the sanitary duties assigned to them. In every instance better supervision of preliminary shower would be beneficial for the sanitary condition of the pools. In almost every instance the capacity of the filters is not sufficient to refilter the water in the pool once during the day time. This would seem a grave defect. All these pools practice disinfection but where hypochlorite is used it is not checked up for available chlorine nor is there any check of the results derived from its use. Copper sulphate is used in two instances but here too the results are not known.

One pool of 56,250 gallons should be mentioned particularly. With the coöperation of the management, the water was used seventy-five days. There were 3,565 bathers. The first six days nothing was done to control the sanitary situation. The count rose rapidly and fermentation occurred with .1 cc. The filters were then started and run continuously for six days. At first the count improved markedly; then, as the filters became so dirty that frequent reversal was not sufficient to cleanse them, the count rose again. Next, copper sulphate was used after 5,000 gallons dilution. The count did not improve in six days. The filters were next run ten hours every day and copper sulphate added alternate days The count improved to normal for this pool and remained so. After a month of this régime, the engineer who had charge of the pool went on a vacation, leaving a substitute in his place. The count promptly rose and stayed up till the vacation was over. At the end of the time mentioned, the water still had a pool-normal count through filtration and chemicalization but was changed anyhow.

The bath house pools are used only as a plunge after a Turkish bath. The very nature of things makes them more used in the winter than in the summer. Every person who uses one of these pools has had a full and thorough bath with soap, hot water and plenty of

friction. The skin bacteria should have been very largely eliminated in this way. These pools should practice disinfection, as the size of the pools does not justify installation of refiltration plants.

The two beaches examined showed results exactly opposite. The one on the river was highly polluted and showed very marked evidence of intestinal contamination, even .1 cc. The lake beach was about the same as city water—extremely low count.

The conditions of the pools in this city do not differ materially from those found in other cities, although they do not compare favorably with many reports in literature. The evidences of contamination with intestinal bacteria are frequent where certain classes of people use the pools. The comparison of the figures for local swimming pool conditions compare very unfavorably with those of the city water which should be the standard here. More time and attention should be given to sterilization of the pools.

General Conclusions.

Construction.—Pools should be built with a smooth lining, offering as little obstruction to the flow of water as possible. Four sides of the pool should be available for use in every instance. A drip basin should be situated about twelve inches below the main platform to catch the drip from bathers standing before diving. Life rails should be about four sides. An overflow gutter should also be arranged the same. Splendid combination drip basin, life rail, overflow gutters are frequently seen. Where possible pools should be at the top of the building in which they are contained. The problem of lighting is thereby easily solved (and it is imperative that a submerged person should be always easily seen for perfectly obvious reasons), further, the water from the pool can be readily used when the pool is on the upper floors, for flushing closets, urinals, etc., throughout the rest of the building, the water of dilution replacing that withdrawn for the purposes mentioned. The saving of the cost of water by this location of the pool should more than offset the added cost of stronger construction and extra plumbing.

Where a drip basin is installed the pool platform may slope toward the pool for drainage, otherwise it should slope away.

Strict attention should be given the cleansing of the pool when it is emptied. It should be thoroughly scrubbed, scraped, and then flushed. Careful steaming of the walls and finally, airing and drying would help materially in reducing the bacterial content of the next filling. Where wreaths of sediment collect on the floor of the pool during use, various ways have been devised for its removal. Pumps on the general plan of a vacuum cleaner are recommended. Where refiltration is practiced the water being constantly in motion should prevent the formation of these wreaths.

Water.—The same attention should be given to the water for filling purposes as is given to drinking water. The purest water obtainable should be chosen rather than the most accessible.

Management of the Water.—Constant *refiltration* makes it possible to use a

given filling a greater length of time. This is an important item in cost of maintenance and will more than compensate for the initial cost of the equipment. The tendency toward installing a plant of too small capacity should be avoided. It should be possible to refilter all the water in the tank in one day (eight hour days are vogue). Usual frequent attention should be given to reversal of filters, washing and steaming. *Dilution* should be practiced sufficient to make up the loss by splashing, etc. No definite amount can be stated. This should depend on the number of bathers, frequency of refilling, etc. As a rough working rule it is suggested that the dilution be sufficient to amount to one filling between refillings. *Refillings* should be determined by the number of bathers, size of pool and bacterial content, as there is no direct relationship between the number of weekly refillings and the sanitary condition of water. The general appearance of the water counts for nothing.

Chemical disinfection is imperative. Both calcium hypochlorite and copper sulphate have advantages—the latter probably being the favorite. Either should be used in strengths increasing from .5 part to the million of water depending on the size of the pool, number of bathers, the hardness of the water and the bacterial reduction obtained. Bleach must be tested frequently for available chlorine. It quickly disappears from the pool.

Supervision of Bathers.—Full shower bath with soap should be demanded of all bathers. To make this possible the shower apparatus must be inspected very frequently. Instruction should be given bathers in the purpose of the bath. Especial attention should be given the peroneal region. When water strikes a person's body, the natural tendency is to urinate. This should occur in the shower, not in the pool. The floor should be taken care of to prevent tracking the dirt, bacteria, etc., which have been washed off by the shower, onto the deck about the pool. On the pool platform inspection of every entrant should be performed. Bathers should wear no clothes. If this be impracticable the authorities of the pool should furnish the suits—one-piece, undyed, scanty,—and see that they are properly sterilized and dried between usings.

Municipal Control.—If necessary, every pool—charging a fee for entrance or free—should be licensed by the local health officer. Inspection and bacteriological examinations should be frequent, and failure to come up to a certain standard should be cause for revoking a license. In this the method of control would somewhat resemble that of milk. If the use of swimming pools be made compulsory the authorities who so make them should be held strictly accountable for the sanitary conditions in the pools and the spread of disease through them.

STANDARDS FOR THE PREVENTION OF COMPRESSED AIR ILLNESS.

SEWARD ERDMAN, M. D., F. A. C. S.,
New York City.

Read before the Industrial Hygiene Section, A. P. H. A., Oct. 17, 1917, at Washington, D. C.

A "STANDARD BILL for the Prevention of Compressed Air Illness" has been very carefully prepared by the American Association for Labor Legislation, and this bill was adopted without change in New Jersey in 1914.

It is almost identical in many of its provisions with the New York State bill which was passed in 1909, the rates and times of decompression for both tunnel workers and caisson workers is the same in all three bills above alluded to.

However, the New Jersey bill provides for shorter hours of labor than the New York bill, and accordingly provides a still greater margin of safety for the air workers, in thus reducing the length of exposure to high pressures which is one of the vital factors in the causation of the disease.

The provisions of the "Standard Bill" adopted in New Jersey, are thoroughly endorsed by the writer, in so far as they concern the general duties of employers, equipment for work in compressed air, suspension of caissons, inspection, medical attendants and nurses, hospital lock, the employment of certain persons prohibited, physical examinations, record of physical examinations, hours of labor, and the provisions for the enforcement of the law.

In addition to these requirements, we would advocate the following:

1. That all tunnels and caissons be provided with telephone allowing instant communication with the compressor plant.

2. That the hospital lock be furnished with a glass port, permitting observation of the patient from without, by the medical attendant.

3. That no person over forty years of age, who has not previously worked in compressed air, shall be allowed to commence work under pressures above 20 pounds.

4. No person, whose weight in relation to height and age exceeds the standard tables in common use by life insurance companies, shall be permitted to commence work in compressed air. (Fat men are very poor air risks.)

5. No alcoholic beverages shall be allowed on the premises.

6. That hot coffee be furnished the workers after completion of their shifts.

It is not our purpose in this paper to read the many excellent provisions of the Standard Bill, to which allusion has already been made; and of which we fully approve.

There remain, however, for discussion the three really vital factors in the causation of compressed air illness, viz.; amount of pressure, length of exposure to pressure or hours of labor, and rate and time of decompression.

(a) The amount of pressure must of course be governed by the physical laws of hydrostatics and will vary with the depth at which the work is being carried on.

We agree with the provision of the bill that except in case of emergency, no work shall be allowed where the air pressure exceeds 50 pounds, which degree of pressure seems to approximate the limit of human endurance.

(b) The length of exposure is subject to control, and in its provisions for hours of labor, the Standard Bill as adopted in New Jersey provides such shortening of these hours over those of the New York bill as must still further safeguard the air worker.

We see no occasion to suggest a further reduction in the length of exposure.

(c) The rate and time of decompression is by far the most important element in the etiology of compressed air illness, and it is not strange that there should be great divergence of opinion as to the minimum requirements and the method for decompression.

The air workers themselves as a rule strongly favor very short periods of decompression, and in their ignorance of the disease and their haste to leave the working chambers, they would undertake risks which are entirely unwarranted and dangerous.

The physiologists and scientific investigators stand at the other extreme, and urge decompression periods which are very long, probably unduly so.

Under these circumstances we turn with great satisfaction to the recommendations of a man like Mr. Henry Japp, an engineer of the widest personal experience in compressed air work and a thoroughly practical man, who at the same time has made an extensive study of the disease and has recognized the value of the brilliant work of Haldane, regarding the method known as stage decompression.

Certainly for tunnel work we would advocate the adoption of the stage method of decompression, and would accept Japp's table for time of decompression, as probably the best yet submitted; combining as it does the advantages claimed for the stage method, and at the same time reducing the length of the decompression to within perfectly practicable limits.

Japp's table provides, at least so

JAPP'S TABLE NO. 4.

Tunnel pressure (gauge).	Time worked	Uniform decompression (New York State law).	Maximum air saturation of body on emerging.	Stage decompression (based on table 2).	Maximum air saturation of body on emerging.
Pounds.	Hours.	Minutes.	Pounds.	Minutes.	Pounds
28	3¾ and 3¾	18¾	25.70	14	25
36	3 and 3	24	30.25	36	25
41.99	2 and 3	42	31.25	37	25
45.99	1½ and 1½	46	32.00	35	25
50	1 and 1	50	32.50	33	25

far as mathematical calculations are correct, that the "residual saturation of the tissues, upon emerging from the lock, shall not exceed 25 pounds" and so great an authority as Haldane has said regarding Japp's proposal that it "would seem to be consistent with reasonable safety," and "that there can be little doubt that for the great majority of men, a pressure (*i. e.*, residual saturation) of 25 pounds would not cause appreciable danger," "although the pains in the joints, etc., which are the most easily produced and least serious symptoms of caission disease would not be prevented." (Haldane Trans. Am. Soc. Civil Engineers, Vol. LXV, 1909.)

Japp has prepared a table showing a comparison of the New York State law requirements, of uniform decompression, with his own proposal for stage decompression.

It is hereby shown that the stage method would require less time for decompression from pressures up to 28 pounds, also less time for pressures about 36 pounds.

The greatest fault of the New York State law affects the decompression periods from pressures between 30 and 35 pounds, because in this space of 5 pounds, begins the real incidence of serious and fatal cases, and the New York law falls about ten minutes short in regard to this danger zone.

In the Standard Bill as adopted in New Jersey, owing to the shorter periods of exposure permitted, this fault is not so striking.

That all three of the bills alluded to, provide for considerably shorter decompression times in caisson work, is an inconsistency which merits an explanation; and we find that there are certain practical considerations which have led to concessions in the case of caisson work; and the shorter periods correspond very closely to the "Proposed rules to be observed in work under compressed air" submitted in 1909 to the New York State Commissioner of Labor by twenty-one engineers, doctors and contractors. Among the considerations which are advanced may be stated the following:

(1) The air locks in the caissons are very small, although they represent a greater proportion relative to the size of the working chamber than is the case in tunnels.

Consequently it is usually necessary for the men to stand, often in bent and cramped posture, and crowded quarters, during decompression; also there is danger of vitiation of the atmosphere under these conditions.

(2) It is commonly claimed that owing to the necessarily frequent moving of caissons, and to the presence of bucket hoist openings, the air lock is responsible for appreciable leakage, and that this leakage is especially noticeable during slow decompressions.

(3) Fewer men are employed under high pressure in caisson work nor is the high pressure work long continued as in tunnels.

(4) The caisson worker has as a rule better opportunity to habituate himself to increased pressures, for he starts at very low pressures and only very gradually attains the high pressure which then may be necessary only for a few days.

Hence we are inclined to regard with leniency the shorter decompression periods for caisson workers, but we should demand that even in caisson work, the tunnel rates for decompression should apply as far as conditions will allow. On the other hand in tunnel work where very large numbers of men must work for many months at dangerously high pressures, and where the locks are large, benches provided, and the air space ample; no concession should be allowed and we should insist on the adoption of those measures of prevention which we believe epitomize the results of scientific and practical work which has up to this time been recorded in the study of compressed air illness.

RECENT PROGRESS IN VENTILATION.

FREDERIC BASS

Report of the Committee on Air Supplies to the Sanitary Engineering Section, October 18, 1917, at Washington, D. C.

DURING the past year reports of research and experiment on air supplies have placed emphasis upon the qualitative rather than the quantitative phase of the problem.

The work of Dr. E. V. Hill of Chicago is notable. He has devised an ingenious device for determining dust and also a combination score card or synthetic air chart consisting of scaled divisions for temperature, humidity, dust bacterial count, odors, carbon dioxide and quantity, and a summary of these.

The New York Ventilation Commission has had five principal topics under consideration which may be described as follows:

1. A comparative study of the air conditions and the sensations produced on the occupants in two types of ventilated rooms, observed side by side in the same school building, the two ventilation types being the open window room with gravity exhaust, temperature kept from 64° to 68°, and the closed window, plenum fan ventilated room, with gravity exhaust, temperature being kept in the neighborhood of 68°.

2. A study of the efficacy of humidification in a schoolroom, comparison being made with a neighboring room of nearly identical arrangements but without humidification. Records were made of the air conditions, of the opinions of the teachers concerned, and the commission's staff observer, the physical condition of the pupils at the beginning and end of the experiment, the mental proficiency of the pupils at the beginning and end, and the prevalence of colds among the pupils.

3. From the two preceding studies there have been derived certain facts bearing on the subject of dryness in schoolrooms, which matter was presented in a paper by Mr. Palmer, chief of the Investigating Staff, before the summer meeting of the American Society of Heating and Ventilating Engineers.

4. A study of the air conditions in open window, gravity exhaust schoolrooms and closed window, fan ventilated, gravity exhaust schoolrooms, and their effect on the body sensations of occupants of high school age.

5. A study of the prevalence of respira-

tory sickness among school children in differently ventilated types of schoolrooms.

METHODS PURSUED IN ABOVE STUDIES.

1. A study of the open window, gravity exhaust schoolroom as compared with the closed window plenum fan ventilated schoolroom: This study was the continuation along somewhat modified lines of studies conducted during 1915. In the present instance three plenum fan ventilated schools of the better type were selected and six rooms in each school were chosen for study. Three rooms in each school were ventilated under the fan system of the building. The other three rooms in each school were cut off from the plenum fan, fitted with window board deflectors and made to depend for their ventilation on the natural circulation through the windows and the gravity exhaust duct.

About six weeks were spent continuously at each school, an observer on the commission's staff putting in full time in passing about from room to room making the required observations. In this manner it was possible to study the operation of these two ventilating methods under like weather conditions, with occupants of approximately the same age and numbers, and with rooms of similar construction and exposure.

2. Humidification: This work was carried on in the two rooms in one of the New York City schools which had been fitted up specially for experimental purposes and which were described in the June issue, 1917, of the *Heating and Ventilating Magazine* (Vol. v, No. 12?).

Pupils of the sixth grade, in equal numbers, were assigned to these rooms in the fall of 1916 and remained under observation until April, 1917. Physical and mental examinations were conducted at the beginning and at the end of the period. Inasmuch as the course of air flow through the two rooms differed, the classes were shifted about several times, the group that was first in the humidified room, however, being always subjected to humidified air, and the dry air group being exposed to the unhumidified air throughout.

During the first half of the experiment the temperature in the two rooms was kept about the same. Under this arrangement the humidified rooms always felt warmer. In the second period, the total deheating effect of the air in the two rooms was kept the same, this being judged by the readings of a special instrument called a "comfortimeter" devised for this purpose by Professor Phelps of the commission. This plan resulted in the temperature of the humidified room being kept several degrees lower than in the other room. The difference in relative humidity between the two rooms averaged close to 14 per cent throughout the entire period.

Records of respiratory illness were kept by a nurse attached to the City Department of Health, this data being part of that collected in a great many schoolrooms in the course of a special study of this question.

The mental studies in this experiment have been reported by Thorndike and Kruse in *School and Society* (Vol. v, No. 127, 1917).

3. Dryness in schoolrooms: The cause of dryness in schoolrooms, the distinction between dryness of and dryingness air, and the significance of relative humidity have been made the subject of a paper which was presented at the summer meeting of the American Society of Heating and Ventilating Engineers and reported in the July issue, 1917, of the society's *Journal* (Vol. xxiii, No. 4).

4. The association between air conditions and bodily sensation of comfort: Two months, one in the fall of 1916, and one in the winter of 1917, were devoted to a study of the effect of differently ventilated rooms on body comfort. Four squads of twenty-

four girls, each of high school age, were escorted first to a window ventilated room, and then to a closed window fan ventilated room and their opinions of temperature, odor, freshness, etc., were recorded. A single squad was used for about two weeks continuously. A half hour was spent in each type of room each day. The order of the rooms was altered so as to balance out any effect of sequence. It has been said that an open window room feels "fresher" and "livelier." Air analyses usually fail to account for this feeling. The present study was an effort to get at the bottom of the cause of this difference in sensation. The two types of rooms were so ventilated as to be almost identical in temperature and humidity. Differences in the feelings of the rooms must then be due to conditions peculiar to the method of admitting and extracting air. To eliminate extraneous influences which act on the visual senses in determining a choice, the subjects were blindfolded and were led about the halls in such a manner as to confuse their sense of location before being taken into the classrooms.

5. The influence of classroom ventilation on the prevalence of respiratory sickness among school children: This study was inaugurated by the Bureau of Child Hygiene of the New York City Department of Health and the Ventilation Commission was called in to coöperate in the work. During the spring of 1916 2,500 public school children distributed over a number of schools in different parts of the city were placed under close observation by nurses and physicians of the Health Department. Each classroom was visited twice a day and every absentee was noted and the cause of the absence determined by a visit to the home. A record was also kept of those children present in school who were suffering from respiratory affections. This study was continued for eight weeks. The children were about equally divided among three main types of ventilated rooms, viz., (a) open window, low temperature rooms, the thermometer ranging from 55° to 60° F.; (b) open window rooms with temperatures from 64° to 68°; (c) fan ventilated, closed window rooms with temperatures around 68°.

This study was repeated in the winter months of 1916 and 1917, about 3,000 children being under observation at this time. For the most part the same schools and the same rooms were used but of course with an entirely new lot of pupils and with a new set of nurses.

Records of temperature and relative humidity and the general impressions of the air were made by the nurses in addition to the records of illness among the pupils.

The results of these various studies have not been completely worked up and no published reports are available other than those already specifically mentioned. The compilation of the commission's final report is now under way but in all probability this work will not be ready for the press before 1918.

In general, the committee may report that while considerable research has been in progress, the results are not yet available for discussion or use in practice.

THE PREVENTION OF HAY-FEVER AS A NATIONAL PROBLEM.

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THERE is no preventible disease of serious importance that has received so little attention as hay-fever. Although ranking as one of the most common of the non-fatal diseases, it is only recently that any organized efforts have been made for its prevention.

The records of the American Hay-Fever Prevention Association show that about 1 per cent of the population of the United States is subject to hay-fever* so that the number, about one million, is sufficient to demand the most earnest consideration.

The serious effect of hay-fever is not well understood. From one to two months, and sometimes much longer, the victim of hay-fever suffers from symptoms which depress his vitality and lower his energy. Asthma and bronchitis are complications in a large number of cases. In our Hay-Fever Clinic at the Charity Hospital we have had, during this season, two cases of hernia from violent sneezing, one case of mastoiditis and many other complications of minor importance. Marked nervous depression is common among hay-fever sufferers as a result of the prolonged respiratory disturbances.

The etiologic relation of pollen to hay-fever and hay-fever to asthma is now so well established that its consideration need not delay us at this time. Its recognition, however, is an important factor in instituting practical methods for the prevention of hay-fever. The American Hay-Fever Prevention Association has for several years, through the medical and lay press and the state boards of health, kept this fact before the public so that it would be in a receptive condition for active legislative methods for the prevention of hay-fever.

Briefly stated, about 90 per cent of the fall cases of hay-fever in the Eastern and Southern States are due to the common and giant rag-weeds (ambrosia elatior and trifida), the remainder being due to the cockle bur (Xanthium), marsh elder (Iva) and a few other weeds, most of which are only of local importance.

In the Pacific and Rocky Mountain States these are replaced by the wormwoods (artemesia) and other weeds a description of which is given in our article published in the Reports of the United States Public Health Service.

The golden rod, roses and rosin weed, associated with hay-fever in the public mind, are not responsible. Their pollen is never found on our atmospheric pollen plates which are exposed during all seasons to detect the various pollens found in the atmosphere.

Vernal hay-fever is due principally to the pollen of the grasses (in addition to that of the amaranths (amaranthus), chenopods (chenopodium) Russian thistle (salsola) and yellow dock

* Hay-Fever, Its Relation to Seasons, Occupations, Sex and Color. Scheppegrell, *New York Medical Journal*, December 9, 1916.

(rumex).† The pollens of the trees are responsible for hayfever, only in certain localities.

Prevention.

Hay-fever may be prevented by carrying out certain methods, which, fundamentally, are simple. Being principally due to the pollen of weeds, the remedy evidently is the control of these where their pollen may be carried to the human respiratory organs.

As it is impracticable to destroy all weeds, it is important to know their potential area—that is the space to which their pollen may be carried—so as to determine the distance to which they should be excluded.

The pollens which cause the early hay-fever are relatively large (30 to 60 microns) so that their potential area is not great.* While this varies, due to different wind velocities, one mile is sufficient protection from most of these.

The pollen of the common rag-weed (ambrosia elatior), however, measures only 15 microns and its buoyancy is so great that it will traverse a distance of five miles in a wind of twenty-miles-per-hour velocity. To be effective, therefore, these weeds should be excluded to at least five miles from populated areas.

Legislative Methods.

Legislation for the effective prevention of hay-fever should include municipal, state and federal laws. City ordinances should not only be enacted against weeds, but, to be effective, should specify that when the property-holder does not cut his weeds, the city may have this done at his expense. In many cases, this is economical not only for the city but also for the property owner.

State laws should specify that land within one mile of municipalities should not be allowed to reach the pollinating stage, and, in the case of the rag-weeds, this distance should be five miles.

The real solution of the hay-fever problem, however, is within the power of the Federal Government. Should it be declared a violation of the Interstate Law to transport seeds of rag-weeds and other hay-fever weeds from one state to another, the farmer in self-defense would be compelled to destroy these weeds on his farm. This would not only result in an enormous reduction of hay-fever weeds, but would also be of great benefit to the farmer, as the United States Department of Agriculture has repeatedly shown that millions of dollars are lost annually from the neglect of weeds.

While such plans may at first sight appear radical, similar ones are already in force for the protection of our agricultural interests. The transportation of diseased plants and trees into certain states is punishable with severe penalties and there has been no great opposition to their enforcement.

When we realize the great amount of suffering that may be prevented by these means, which at the same time tend to improve the efficiency of our agricultural methods, the enactment of such laws should be strongly urged by all those interested in relieving mankind from the oppression of this distressing disease

* A Year's Work in Hay-Fever Prevention in the United States. Scheppegrell, American Journal of Public Health, Vol. 7, No. 2.

† Hay-Fever: Its Cause and Prevention. Scheppegrell, *Journal of the American Medical Association*, March 4, 1916.

* Hay-Fever and Hay-Fever Pollens. Scheppegrell, *Archives of Internal Medicine*, June, 1917.

PLUMBING AND DRAINAGE OF BUILDINGS.

Preliminary Report of the Committee on Plumbing and Drainage of Buildings to the Sanitary Engineering Section, American Public Health Association. Read at Washington, D. C., October 18, 1917.

THIS committee was appointed with the understanding that it was to consider the broad general principles of plumbing design, without going into the details of the actual methods of installation, and then make general recommendations that could, if adopted by this section, be referred to as authoritative by health officials who are entrusted with the work of drafting municipal plumbing codes.

The prompt removal of household wastes is of the greatest importance to the health of a community, and this can only be accomplished by the introduction of adequate plumbing and drainage systems and by the abolishment of privy vaults and cesspools. Furthermore the health of the occupants of buildings is better maintained if a copious supply of water is available for purposes of cleansing, and if the plumbing fixtures of all kinds are conveniently located for the purposes for which they were designed. It is also known that sewer air may have the property of lowering the bodily resistance of those who are obliged to breathe it continuously, notwithstanding the fact that communicable diseases are seldom, if indeed they are ever, traceable to sewer air.

The plumbing and drainage of buildings, therefore, has a direct relation to the public health and is properly a function of health work that should be considered by the American Public Health Association, and health officials should insist upon the adoption of a plumbing code that is in accord with the best sanitary practice. The enforcement of the provisions of such a code should be left to trained plumbing inspectors. The question as to whether the administration of plumbing ordinances should be under the jurisdiction of the health department, or of the building department, is one of administrative detail and may be answered definitely under definite conditions. While there is an apparent duplication of inspection in the system whereby the buildings are inspected by the building department and the plumbing by the health department, this duplication is more apparent than real, since in any case these inspections must be made by a separate personnel. The enforcement of the provisions of a plumbing code by the health department furnishes a trained personnel for reinspection and for the inspection of nuisances connected with defects in existing plumbing, which would not be available if plumbing inspection were left with the building department. In certain small communities, there is no building inspection and the function of plumbing inspection may properly be combined with that of general sanitary inspection, to the advantage of the health department. The above is likewise true in regard to the examination and approval of plumbing plans and specifications. Plumbing plans and specifications are generally separated from the general building plans, meriting the attention of those well trained in plumbing practice.

Plumbing in reality constitutes the capillary system of the water and sewer systems of our cities. Plumbing should, therefore, never be considered from a building inspection standpoint, any more than should the original building of water and sewer systems be considered from the point of view of street or highway construction. In its relation to the department of health, plumbing construction in new buildings compares with the construction of new water and sewer systems, for indeed it is

the connecting link between the water supply system and the sewerage system.

The rules and regulations governing plumbing should in all cases apply equally and include all apparatus for introducing the water supply to the plumbing fixtures, and removing the liquid and water-carried wastes through the drainage system to an approved sewerage system. Water services and house sewers are important links in the chain that involves complete plumbing and drainage systems, and the importance of inspection and tests before they are concealed or enclosed, is essential.

This introduction permits of the following summary:

1. The health of a community demands the prompt removal of all household wastes.

2. This can be accomplished only with a copious supply of water and through properly designed drainage systems.

3. The drainage system must be so designed that sewer air does not find its way into the building, for although no specific disease would result therefrom, the vitality of the occupants might be lowered.

4. This necessitates the adoption of a plumbing code that should be drawn up by or approved by health officials.

5. The enforcement of the provisions of the code requires competent inspection of the work.

6. The duties of a plumbing inspector, superintendent of sewers and sanitary police, are so closely related that a versatile official can usually be employed to fulfill the duties of the three positions in the smaller municipalities.

7. The abatement of nuisances connected with defects in existing plumbing is simplified by having a personnel of trained plumbing inspectors.

8. The chief concern of a health department in regard to plumbing is to have it so installed that no menace to health and no nuisance will result.

9. No menace to health and no nuisance will result if the pipes are adequate in size and arranged so as not to cause obstruction, if there is a plentiful supply of water with which to flush fixtures, if the installation is of such substantial construction that sewer air cannot enter the building, if there is no possibility of contamination of the drinking water supply, and if the material of all fixtures is non-absorbent.

If these facts are admitted, the general fundamental principles of plumbing design should be as follows:

1. The system should be as simple as possible.

2. All unnecessary pipes should be omitted, to save expense to the owner, and to reduce the number of joints that may become defective.

3. Every fixture trap should be protected from syphoning and back pressure, and a circulation of air assured.

4. Only extra heavy grades of adopted metal pipe, fittings and traps should be permitted within the building. A system of piping that will not corrode easily, nor be affected by sudden changes in temperature, with the joints equally as strong as the pipe itself, should be installed. Frost should be guarded against in locating pipes and fixtures.

5. The size of waste pipes should be ample for the fixtures which they are to serve, but not so large that the scouring effect of the flush will be lost.

6. All main waste pipes should be extended through the roof to a point at least two feet above all windows that are within twenty feet of such pipes.

7. Water supply pipes and flush tanks must be of such a size that an ample flush can be obtained for each fixture and cross connections with dual supplies must be avoided.

8. All water closets should be placed in compartments that have ample external light and ventilation.

9. Water closet fixtures should be connected with the soil pipe by a joint that will remain permanently air tight.

10. The running trap and fresh air inlet need not be required except in special cases, such as where houses are terraced, one above the other, in cases where main sewers are exceptionally foul, or where the majority of houses in a built up section are already provided with such traps. The trap retards the flow, retains solids and often becomes entirely blocked, thus creating a nuisance. Sewer air is no worse than house drain air, and if the plumbing system guards against one, there is no danger from the other.

11. All pipes must be run in as direct a manner as possible, and no changes in direction should be made with less than 45° fittings, except in vertical lines where TY's may be used. A sufficient number of cleanouts must be provided to permit the removal of any possible obstruction.

12. The water test must be applied to all work before it is concealed or enclosed, and the pressure smoke test must be applied to all work when the building is completed and ready for occupancy. The peppermint test is unsatisfactory.

The committee recommends that publicity be given to this preliminary report, and it hopes that all criticism that may improve the recommendations herein set forth will be sent promptly to the chairman. The committee requests that it be continued for another year, in order that it may make a final report in the light of the discussion brought forth by this preliminary report. It is believed that the adoption of broad, general principles of plumbing design by this section will result in much greater uniformity of the plumbing regulations of American municipalities, especially with the active coöperation of the members of the Association, which coöperation is earnestly solicited.

Respectfully submitted,

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MEDICAL DEPARTMENT RECORDS, MORBIDITY REPORTS, AND VITAL STATISTICS OF THE NAVY.

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Read before the Annual Meeting of the American Public Health Association, Section on Vital Statistics, Washington, D. C., October 17, 1917.

IN THE following remarks the attempt will be made to give a brief, yet somewhat detailed description of the nature and kind of statistical data collected by the Medical Department of the United States Navy.

To understand our methods of collecting and compiling statistics it is necessary to know that permanent records must be kept in file in the Bureau of Medicine and Surgery to serve two distinct purposes—records which will satisfy the needs of the Pension Bureau as well as furnish all data required for necessary statistics—statistics for current use in connection with measures for the prevention and control of communicable diseases, statistics which will indicate at all times the distribution and condition of the sick of the Navy, and figures for publication in the annual report of the Surgeon-General which includes a retrospective view of the activities of the Medical Department during the year.

It is highly desirable that one system of records shall be made to serve all purposes. The records must be adequate and yet the system must be thoroughly routine and simple in practice in order that it may stand the tests of emergencies under war conditions.

Description of the system which has been in use since 1910, with its various key letters, may leave you to doubt its simplicity, but however complicated it may seem on first examination it is in fact simple and satisfactory in practice, both in the field and on board ship. From the central office standpoint—the Bureau—it serves both pension requirements and statistical necessities quite well, and it permits expansion of the Navy, either sudden or great, to be followed closely and to be taken care of without confusion or loss of time except that which is necessarily incident to the training of additional clerical force. Much credit is due Assistant Surgeon C. E. Alexander for devising the system and perfecting it in operation.

Any officer or enlisted man belonging to the Navy may, sooner or later, by disease or injury, acquire a disability which will entitle him to a pension, or to the highest rate of retired pay, if the disability which leads to retirement or discharge from the service is determined to have been acquired in line of duty. In the Bureau of Medicine and Surgery there must be readily available accurate medical and service records of all persons who have served in the Navy. The medical history of every person must be kept in such form that it can be referred to at any moment, whether the individual be under treatment at present, in a Naval Hospital, perhaps, with some question as to the origin of his disability pending, or whether the circumstances to be ascertained occurred years ago. The data at hand must be sufficiently complete to permit two important questions to be answered. The first is, "What was the origin of the disability; in line of duty or not in line of duty?" and the second is, "What was the nature and degree of the disability when the individual was found unfit for service?" Determination of the origin of disease or injury, which has caused

death or disability, sometimes brings into consideration questions of a complicated nature, and frequently the evidence must be referred to the Judge Advocate General of the Navy for his legal opinion.

Origin, and the pensionable status, are both large subjects but they are outside the scope of this paper, and the foregoing is sufficient to indicate that pension questions alone make it necessary to preserve accurate data, amounting practically to complete medical histories of all who serve in the Navy. Such records have been kept from the earliest times, but forms and filing systems have been changed from time to time. So long as the Navy was small it was a comparatively simple matter to keep the records in books, but now with the most modern system of recording, a large amount of space in the Bureau is required for file cases alone, and more floor area is being demanded constantly. Files which contain records of personnel, and statistical data relative to them, have to do primarily and conjointly with the work of two divisions of the Bureau,—the Record and Pension Division and the Sanitation Division. From the viewpoint of the first they may be termed records; for the purposes of the latter they become statistics.

All records, or all statistics, as you please, are based upon the individual health record. This system of health records—one for every person belonging to the Navy, to accompany him throughout his service, and to be held in custody by a medical officer—was adopted in 1910, and its use since then has given great satisfaction.

The Health Record is a loose-leaf booklet bound with metal clasps. All pages are removable. The first sheet contains lines for census data, and lines for a descriptive list of the physical characteristics of the individual. On the back of this sheet there are diagrams of the body in which identification marks and scars may be indicated with red ink. Following the identification pages there are several sheets for medical history. There is a sheet for the dental record, to be filled in by dental officers, pages for abstracts of the health record, a page for vaccination records, and a page to be filled in upon termination of service. The filling in of that is the act which closes the health record.

The abstract pages are for entries which summarize the information given at length in the medical history sheets; diagnoses, dates of attachment and detachment, places where treated, the number of sick days, whether or not physically desirable for the service, and the signature of a medical officer suffixed to each entry. There is also a yellow sheet, termed the syphilitic abstract which is to be inserted in the enlisted man's health record in all cases where there is a history of syphilis. On one side of the abstract there is space for a dated statement over the patient's signature to the effect that the nature of the disease has been explained to him, he is convinced he has syphilis, he recognizes prolonged treatment and several tests will be required for a cure, and he is anxious and ready to take necessary treatment. On this page space is provided for diagnostic evidence, description, serum reactions, and the signature of the medical officer making the diagnosis. The other side of the sheet is an abstract of treatment. Entries on this page should give a succinct and authentic account of the progress of the case, including essential facts relative to treatment from the time the patient first came under the observation of a medical officer of the Navy.

The potential dangers of syphilis in a given case are likely to be overlooked because of frequent transfers in the service. The syphilitic abstract prevents that and insures proper sequence and continuation of treatment upon transfer from one ship to another. The abstract is given a color in

order that syphilitic histories may be recognized at once when a large number of health records are received together as in the case of a large draft of men coming on board at the same time.

The health record of every officer and enlisted man accompanies him throughout his service. In the case of an officer, if any entries have been made, the loose medical history sheets are removed and forwarded to the Bureau of Medicine and Surgery at the end of the calendar year, and upon promotion. In the case of an enlisted man, the health record is closed upon termination of service, whether by expiration of enlistment, discharge, desertion, or death. When immediate reenlistment follows expiration of enlistment all abstract pages are removed and transferred to the new health record. In all other cases the entire record, properly closed, is forwarded to the Bureau.

Whenever any person in the Navy is found to be incapacitated by disease or injury to the extent that it becomes advisable to relieve him from duty his name is put on the sick list and the pertinent facts in the case are entered in his health record. In this connection, after the date and name of the place—ship, station, or hospital—the diagnosis is entered strictly in accordance with the terms of the Navy nomenclature. In the margin to the left of the diagnosis is written the capital letter, "A" which is to be read, "Admitted to the sick list," or the letters, "RA" which mean, readmitted to the sick list as with the diagnosis there written, it being understood in that event, he has been admitted before under the same diagnosis, the letters, "RA" signifying that he has never fully recovered from the disease or injury indicated. For example, a patient with synovitis of the knee, or acute bronchitis, or gonococcus infection of the urethra appears to be fit for duty after a few days' treatment, but a day or two after he has been discharged to duty it is recognized that further rest in the sick bay, or perhaps even bed treatment, is necessary. He is then readmitted (RA). In cases of acute disease—for instance, acute follicular tonsillitis, where complete recovery has taken place, to be followed later by another separate and distinct attack—a new original admission is made and indicated in the margin by the letter "A."

These key letters are used in the margin as described: A, admitted to the sick list; RA, readmitted; C, diagnosis changed.

The letter "C" is written in the margin to the left of the new diagnosis. The change may have been made on account of error or because a complication has become the paramount cause of disability. The letter "C" is used also when a change of diagnosis is occasioned by some intercurrent infection or injury, or because some chronic affection has become relatively the most important affliction. Sometimes during convalescence advantage is taken of opportunity to administer treatment for an old inactive affection; a dose of salvarsan, removal of an ingrowing toe-nail, treatment of a deformity following an old injury, etc. In such cases the proper letters, "A" or "RA" are to be entered immediately below the, "C", after numerals indicating the number of sick days recorded under the first diagnosis. In case convalescence from the first disease or injury is complete or nearly complete and it should become necessary or advisable to change the diagnosis the proper thing is to discharge the patient, inscribing the letter "D" and then immediately to admit or readmit him as the case may be, under the new diagnosis. The letter "D" in the margin signifies, "Discharged to duty." It means that the patient is fit for duty. "D" is also used where admission is to occur immediately under another diagnosis as just described, the assumption being that he would have

been fit for duty in so far as recovery from that particular complaint was concerned. In cases where sick leave is granted before return to duty, the letter "D" is entered and the patient is discharged upon the commencement of his leave.

The letters, DD signify, "Died" (discharged dead); T, transferred; R, deserted while on the sick list (ran); IS, invalided from the service. (Discharged upon approved recommendation of a Board of Medical Survey.)

The number of sick days charged against a patient for the diagnosis under which he is carried (either A or RA) is entered always in the margin immediately below the letters indicating the disposition of the case; "T" or "C", temporary disposal; "D", "DD", "R", or "IS", permanent.

Immediately below the diagnosis, which has been selected from the official nomenclature, a statement is made invariably in reference to origin. It is written, "Origin in the line of duty" or, "Origin" not in the line of duty. This declaration of the medical officer's judgment is followed by a summary of the evidence relevant to the case.

A key letter is required with every diagnosis relative to an injury. The key letters are to be interpreted as follows: A, suicidal; B, homicidal; C, conflagration, including all injuries incident to general conflagration (burns received otherwise are not classed hereunder); D, accidental drowning or submersion; F, traumatism by explosion, including powder, gas, compressed air, steam explosions, or the explosion of a gun; E, traumatism by firearms, accidental (E includes all injuries caused by the projectile, the blast from great guns, or from the piece when fired); G, traumatism by fall; H, traumatism by machines; I, traumatism by other crushing; J, traumatism due to athletic sports; K, casualty in action on an organized enemy.

Specialty letters indicating occupational influence are also used, in injury cases with, but hyphenated after, the above: R, aeronautic duty (for diseases or injuries incident to actual flying); S, submarine duty (for diseases or injuries incident to actual maneuvering of or accident to submarine boats); U, diver's duty (for diseases or injuries incident to actual diving).

These key letters make it possible for the statistical card (Rough form F, to be described) to include by the use of a single letter a somewhat comprehensive etiological classification of injuries.

When the origin is stated as, "Not in line of duty" it must also be indicated whether or not the disease is the result of misconduct. It is also well to clear up any doubt as to contributing negligence on the part of the patient. In the case of disease due to misconduct, the patient loses pay while he is on the sick list. While under treatment but performing duty he does not lose pay. The Comptroller of the Treasury has ruled that the law providing for checkage of pay applies only to diseases and not to injuries; that is, not to wounds or accidents. In our table, poison cases, among which alcoholism and narcotism are included, are classed as special injuries. Loss of pay applies to them.

After the comment in reference to origin a brief clinical history is entered together with a summary of important symptons and physical signs; notes on the progress of the case, and always a statement as to the actual amount of disability at the time of discharge. Only notes that mean something of real significance are desired. In general, a record should be made of all laboratory findings, all essential elements of treatment; surgical operations, salvarsan, sera, etc.—anything that may bear on the subsequent medical history of the individual, for the health record is both a continuous medical history and a pension record.

Great care is taken to secure the precise information required, accurately recorded. Not only have medical officers been instructed as to important details, but full instructions are printed inside the covers of each health record for ready reference.

As indicated above all medical statistics of the Navy are based upon health record notations and they must agree always with key letters, dates, diagnoses and other data as written therein. Each entry in the health record must be signed in ink by a medical officer, whenever a medical officer is available, and each entry becomes a matter of official record. On board certain small craft and torpedo boat destroyers, which do not carry medical officers, health records are annotated by chief pharmacist's mates, but in case of serious illness or injury the patient will be transferred to some other place, or be visited by the medical officer of the fleet or flotilla tender and thus, sooner or later, a statement in the health record, meeting possible pension contingencies, will be signed by a medical officer. Accuracy, from the statistical viewpoint will also be conserved.

Of the various statistical reports forwarded to the Bureau of Medicine and Surgery, the Rough form F—a statistical card pure and simple—is the first to be described. This card is made out in duplicate on the typewriter. Instructions printed on the back of the ribbon copy card, known as the original and so labelled, cover precisely what is to be written on each line, and every line is numbered. The printed matter on the card labelled "Original" is in black; that on the other half, which is labelled "Duplicate" is in red. After the card has been completely filled in, the "Duplicate" is detached, and retained in all cases at the place from which the original is forwarded to the Bureau.

All data inscribed on this statistical card is copied exactly from the health record. The medical officer is responsible for accuracy, but in practice the compiling and forwarding of cards is entrusted to the chief pharmacist's mate or other responsible hospital corpsman in charge of the clerical work.

The card is essentially a morbidity report and it carries the usual items; name, age, nativity, diagnosis date of admission, date of discharge, result, and number of sick days. The date and place of enlistment, the place from which received, if the patient has been readmitted from some other ship, station, or hospital, and the place to which transferred, if transfer occurs, also appear on the card. Admission, readmission, change in diagnosis, transfer as a patient, death, discharge to duty, desertion, discharge from the service by Medical Survey, and etiological classification of injuries are all indicated by key letters as used in the health record. Origin is expressed, "D", duty; "ND", not duty.

A form F card is required for every admission or readmission. It is the duty of the clerical man, usually a chief pharmacist's mate or a pharmacist's mate, first class, to fill in the card as soon as the patient has been admitted to the sick list. Upon disposal of the case, either temporarily, by transfer or change of diagnosis, or permanently, by discharge, death, desertion or discharge from the service, the necessary data are available for completing the card which can then be released. It is expected to be forwarded to the Bureau immediately, by the first mail into which it is practicable to put it.

When cases are retained on board ship the cards cannot be completed and forwarded until the patients have been discharged or otherwise disposed of. When the diagnosis is changed a new card is prepared to record the new diagnosis, and a note is made on the back of the first card before it is sent to the Bureau, stating the new diagnosis and the reason for change—

error, complication, intercurrent disease, injury, etc. At the same time a note is made on the back of the new card to indicate the former diagnosis and the place from which the patient was received originally. This is done because it has been the practice in naval hospitals to admit all patients as from the hospital when changing the diagnosis. When a patient is transferred to another place—ship, station, or hospital—he is taken up immediately at the new place as a readmission (RA). He must be readmitted with the diagnosis under which he was transferred as written in his health record. If the diagnosis is recognized to be wrong it can be changed.

It is of importance in connection with a communicable disease only that the card be despatched to the Bureau as soon as the case is recognized. That occurs in the great majority of cases, for it is recognized everywhere in the service that these diseases are disseminated largely by close personal contact, through the contamination of individuals by the moist secretions of those already infected. Emphasis is laid upon the necessity for unfailing segregation of recruits at training stations for a period of twenty-one days. At all shore stations and on board ship, where a large number of men are quartered and often over-crowded because of essential service conditions, the paramount importance of early detection of cases and prompt removal of patients is recognized. Separation of the contacts of each type of disease in segregation for observation is the rule, and all carriers in connection with such diseases as diphtheria, cerebro-spinal fever, malaria, and typhoid fever are detained until it is demonstrated that they will no longer menace the main body of men. Since the contacts, who may develop clinical symptons, are under constant observation, early detection of cases is the rule, and in practice, patients are almost always removed to a naval hospital at once, no matter how mild the case may be. In the ordinary course of events the form F card is mailed as soon as the patient has been transferred. Usually it is received in the Bureau the following day. That is true for the Atlantic Coast; an extra day is required for cards coming from Chicago and, of course, more time is lost in transit from the Pacific Coast. However, telegraphic reports are made from the more distant points when circumstances indicate them.

These cards represent practically daily morbidity reports of communicable diseases. The important thing is that they are authentic reports, agreeing in all particulars with the health records; and inasmuch as it is a routine procedure to forward cards immediately, not only for communicable diseases but for all other diseases and injuries as well, the cards cannot be forgotten. Very few cards are lost in transit but should a card be lost it will merely cause delay. All cards are checked in the Bureau with the smooth form F which is received from every shore station and ship at the end of the quarter. A case transferred to hospital will appear in form I, weekly report of sick, prepared every Saturday. The number of cards failing to reach the Bureau promptly has been insignificant.

Cards are not sent in for cases of communicable disease retained on board ship until they have been terminated, but, on the other hand, patients with these diseases are not kept on board, as a rule, when transfer to a naval hospital or hospital ship is possible. It makes no particular difference anyway. The larger ships have ample and adequate hospital facilities with trained attendants for the care of any kind of cases. A moderate number of men ill with communicable diseases can be handled on board ship as well if not better than at a shore station because there are facilities

for isolation of patients and the entire personnel can be observed very closely. For one thing, the discipline is better than it is at training stations, naturally, and it should be remarked that lack of discipline always has a definite influence on the prevalence of communicable diseases.

Eventually, cards in all cases reach the Bureau. We do not pretend to keep track of all cases occurring in ships from day to day. That is unnecessary and it would be impossible; the cases are not numerous enough and every ship has a responsible medical officer, capable of handling an epidemic, who will advise the commanding officer if unusual measures are deemed necessary. However, we do keep track of ship cases by charting them week by week with colored pins, so that a glance will show the types of diseases and the number of cases which have occurred in any particular ship over a period of several months. A battleship must be self supporting in her medical department as well as in all other departments. She is not like a liner or troop ship, making more or less regular trips between terminals. Smaller vessels may find it necessary to put into port for the purpose of transferring their sick. In such cases cards are forwarded.

Upon arrival in the Bureau, form F cards are sorted immediately and all that relate to communicable diseases, including acute tonsillitis, pneumonia, malaria, and the venereal diseases, are tabulated in loose-leaf ledgers under the headings to which the cards refer, ships, naval districts, naval stations, training stations, etc. Every place has a page for each month. There is a separate space on the page for each disease that we are interested in, for tabulating admissions, deaths, and discharges. The month is divided into quarters—days from the 21st to the end of the month falling into the last quarter. The number of cases of each disease carried over under treatment from the previous month is shown at the top of the page so that the number of sick may be known at any time in so far as reports received agree with actual numbers.

The three venereal diseases are tabulated for all stations by months, and separate records of the numbers of sick days are kept in all cases in order that damage rates as well as admission rates may be kept to serve as indicators of the efficacy of prophylactic measures in force at all stations.

Conditions vary so in different ports, foreign and domestic, that this cannot be done very well for ships, but ship cases can be checked very accurately at the end of each quarter.

In order to keep the communicable disease situation in all its details constantly before the eye spot maps and colored pins are used.

Groups of communicable diseases throughout the United States, as reported to us by the United States Public Health Service, are spotted on the map in order that we may observe the movement of disease toward our training stations. On the map there is a card for each naval hospital divided into columns for every month of the current and previous quarters with a space on the left for the registration of protracted cases which have been admitted at some time prior to the beginning of the previous quarter. Each column representing a month is subdivided into quarters or weeks to agree with the divisions in the accounting ledger. The same colors are used in all our visualization schemes. Colored inks are used in the preparation of graphs or blocks to agree with the colored pins. The colors are black for smallpox, yellow for cerebrospinal fever, purple for diphtheria, pink for poliomyelitis, deep blue for measles, white for german measles, red for scarlet fever, green for mumps, sky blue for malaria and brown for typhoid fever. A glance at

the map will show the number of cases of these diseases under treatment in any of the naval hospitals at any time and it will show also in what weeks the cases were admitted. Some of the naval hospitals are adjuncts to training stations; others receive patients from Navy Yards and ships.

On another board there is a card for every ship, with divisions for every month of the year, and the space allotted to each month is divided into quarters. On these cards cases are spotted as reported and the pins are not removed until the end of the year. Surgeon Carrol Fox of the Public Health Service, on duty in Bureau of Medicine and Surgery, superintends this work.

All form F cards are examined for errors or omissions of data as soon as they are received in the Bureau; necessary corrections are made if they can be made without writing to the place of origin, and the cards are turned over to men operating punching machines. Here, special cards designed with numbers to account for all data contained on the original form F cards are punched by the machine, ready to be sorted by a Powers Accounting machine which will sort and distribute about 250 cards a minute. In the ordinary routine, cases are sorted in accordance with the Navy classification and nomenclature, with a view to preparing data for the annual report of the Surgeon-General. Of course, any information in the nature of special statistics can be gotten quickly by the machine, within the limits of data punched in the cards, age groupings, duration of illness, geographical distribution, percentages of readmissions, deaths, etc. There is one thing which we have failed to do with the form F card, and that is to provide a line for recording the nativity of parents, indicating race. The omission, very likely, will cause regret on the part of anthropologists, but the service has not felt the need of such data in the past and a change of the card even in such a small detail would have caused a great amount of confusion contra indicated in war times.

The form F cards are filed alphabetically after they have passed through the hands of the punching machine operators. At the end of the quarter they are checked in every case with the smooth form F received then from the place from which the cards were sent. This form is a list of the cards which have been forwarded during the quarter. It is prepared from the duplicates of the rough form F cards which have been retained at the place of origin. The names of patients are stated in strictly alphabetical order and a patient's name appears as many times as he has been admitted or readmitted during the quarter. If admissions appear for which cards have not been received the missing cards are secured and punching machine cards are prepared then so that in the end every case is traced and included in the statistics of the year. The smooth form F, quarterly report, is forwarded from all ships, shore stations and hospitals; in other words, from all places whence come cards.

Form K is a summary of disabilities from form F cards which have been forwarded. It is a quarterly report accompanying the smooth form F. The totals of patients taken up and disposed of must agree in all cases with the totals as written in the smooth form F. Form K includes a statement of the average daily complement of the place or station, based on the total number of daily rations, issued and commuted, as obtained from the supply officer's returns. From week to week we keep track of the population at training stations and training camps by means of weekly statements furnished by the Bureau of Navigation. Of course, ship complements do not vary like the complements of shore stations.

Form K-2 is a report of casualties, a

special report required for all wounds or injuries the result of accidents, loss of men overboard, explosions and engagements with the enemy.

Form I, a weekly report of sick from Saturday to Saturday, is sent to the Bureau by mail from all naval districts, from naval hospitals, from dispensaries serving in capacity as small hospitals, and from one training camp which has not a naval hospital as an adjunct. This report lists all patients in the order of admission to hospital with dates of admission, discharge and changes in diagnosis. Cases continued to the following week are marked according to condition as C, convalescent; F, favorable; U, unfavorable; S, serious. The probable date of fitness is also stated in each case, and at the head of the form a summary is given: remaining last report, admitted during the week, total, discharged during the week, and remaining at midnight Saturday.

Other forms which have connection with statistics are:

Form L, request for medical survey.

Form M, report of medical survey.

Form N, report of death.

A request for medical survey in any case is signed by the senior medical officer of the ship or station in which the patient is under treatment and the request is approved by the senior officer present afloat or by the commandant of a shore station, who appoints a Board of Medical Survey consisting of two or more medical officers, usually three. The report of a Board of Medical Survey is made on form M and it contains an expression of opinion signed by the Board as to origin, nature of the disease or injury, present condition of the patient, degree of disability, probable future duration, fitness or unfitness for duty, fitness or unfitness for the service, and recommendations, such as, to continue treatment, transfer to hospital, grant sick leave, or discharge from the service. No man may be discharged by reason of physical disability except per recommendation of a Board of Medical Survey, approved by the Surgeon-General of the Navy. All reports of Boards of medical survey are forwarded to the Bureau of Medicine and Surgery where they are acted upon by the Record and Pension Division, subject to the Surgeon-General's approval and signature.

Form N, report of death, indicates in itself the data required. These full reports are very important from the standpoint of the Record and Pension Division. From the statistical viewpoint the form F card serves as a simple death report. In unusual cases form N is referred to because it contains a full description of the last illness and usually autopsy findings if there has been any doubt as to the correct diagnosis. The closed health record will give the same information. The death certificate (form N) is prepared in triplicate—quadruplicate in the case of an officer. The laws and regulations for the Government of the Navy require that a record shall be made of all persons whose deaths occur in the naval service. These reports are required as evidence in claims for pension. Whenever an officer or enlisted man of the Navy or Marine Corps, who is not under the professional care of a medical officer of the Navy, dies in a civil hospital, at home, or abroad, a death certificate is to be obtained from the attending physician, upon the receipt of which a report of death will be prepared and signed by the Surgeon-General. All mortuary reports for life insurance are prepared by the Bureau of Medicine and Surgery. The regulations specify that in all cases of death where the official record may be incomplete the Surgeon-General shall decide as to whether such death occurred in line of duty.

Two other forms may be mentioned:

Form P is a report of surgical operations submitted to the Bureau annually.

Form X has to do with enlistments. A

rough form X card is prepared for each applicant for enlistment whether accepted or rejected. The cards are retained for ship or station files, and filed alphabetically according to surnames by calendar years. The smooth form X is prepared from the cards and forwarded from receiving ships, navy and marine corps recruiting stations, and marine corps recruit depots at the end of each quarter; from other stations, yards, or ships at the end of the calendar year. The smooth form X is an abstract of enlistments.

◆

Military Hygiene School at Camp Greenleaf, Ga.—In a very interesting letter to the editor, Lieut. John Hall, M. R. C., writes as follows:

The School of Military Hygiene is a part of the Medical Officers' Training Camp here in Chickamauga Park. The School is under the direction of Major A. C. Abbott who, I believe, was at one time Health Commissioner of Philadelphia and has been in charge of biological and public health work in the University of Pennsylvania.

After several weeks' general training in the main camp, men are selected to take the course in this school for extra study in military disease prevention. We receive some instruction in camp sanitation, waste disposal, water and food supplies, and communicable diseases. Considerable attention is given to the so-called "paper work" of the Medical Department of the Army which includes reports, records, and other formalities, popularly known as "red tape." We are also expected to become familiar with the principles of Court Martial, U. S. Army Regulations, and Articles of War.

The Sanitary Corps, in which I am commissioned, has a number of its members represented here. They all appear to be non-medical men—specialists in various fields such as mosquito extermination, sanitary engineering, epidemiology, and psychology.

Beside the subjects of instruction previously mentioned, there are many lectures on surgery, physical examinations, and medical treatment of disease.

The military life here is in itself attractive and I believe, as such life goes, very comfortable. We have excellent food and good quarters and do not work very hard. The rather leisurely way in which this training is given and the emphasis which seems to be laid on theory and detail in some of our courses is probably an indication of the government's belief that this is to be a long war.

In all, this is an interesting and valuable experience and, besides preparing us to be soldiers to do our share in the constructive side of the war, it will make much better and broader-minded health officials and physicians who will have an even bigger work to do after the war is over.

EDITORIAL SECTION

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PROPOSED LEGISLATION CONCERNING THE UNITED STATES PUBLIC HEALTH SERVICE.

Attention has repeatedly been directed in these columns to the Public Health Reserve bill, which proposes to establish a reserve corps for the U. S. Public Health Service, similar to the Medical Reserve Corps of the Army. The last congress adjourned without passing the bill

More recently it has been proposed to absorb the U. S. Public Health Service into the Army Medical Department during the period of the war.

Now we learn that a bill is to be introduced into Congress by the National Educational Association, the tentative draft of which bill contemplates the inclusion of the Public Health Service into a National Education Department. It is pointed out in a letter to the editor that this bill, if passed, would "hamper, if not defeat, the plan for a National Health Department."

Concerning the proposal to transfer the Public Health Service to the Army, Major V. C. Vaughan writes in a recent memorandum:

"It must be recognized that in the preservation of the health of the nation, no sharp line can be drawn between civilians and soldiers. Civilians constitute the source of supply of soldiers, and soldiers are constantly mingling with and returning to the civilian population. The relation between these two bodies is one of fluidity and not solidity. Failure to see this and act accordingly may lead to disaster in both portions of our population. At present, civilians are constantly invading the camps in which the infection becomes intensified and is returned to the civilian population throughout the length and breadth of the country. The assembly of troops, whether it be by draft or by voluntary service, acts like a dragnet, bringing the widely scattered infections from city, village and farm, from every part of the compass and from every class and condition of citizenship. *The camp acts as an incubator in which the infections develop and through which they spread and increase in virulence.* Furloughed and discharged soldiers distribute the infection incubated and intensified in the

camps, and even those who are sent across the seas bear these infections to our troops in France. If we are to win this war with the least possible expenditure of life, we must control, or at least abate, the infection among our soldiers, and this cannot be done without attention to the abatement of communicable diseases among the people as a whole.

"Suppose we have an army of 3,000,000 men. At the same time, we have a civilian population of 97,000,000. These are indeed one population, mingling and mixing at all times; one being converted into the other and then returning to the original source. Common sense shows that it is not possible to stamp out disease among 3 per cent of our population while we neglect the source among 97 per cent.

"The health organization of the country, both National and State, extending down to the locality, should be and must be, if our troops are to be most effective, under one and the same control. With this in view, the following recommendations are offered:

"(1) The United States Public Health Service, with its personnel, functions, duties, properties including its hospitals, quarantine stations, etc., should be transferred to the Medical Department of the Army, and placed within the jurisdiction and under the command of the Surgeon-General of the Army during the continuance of the war.

"(2) If the above recommendation can be put into effect, the Surgeon-General of the Army should assign to duty in each State a medical officer whose function should be to coöperate with the State Health authorities in the control and abatement of communicable diseases among the entire population of the State, both civilian and military, both temporary and permanent residents.

"(3) In case the first recommendation be put into effect, the Surgeon-General of the Army should station at such points in each State as he may think wise, and we suggest in the proportion of one to 50,000 population, additional military health officers, who, under the direction of the State officer mentioned in number (2), shall coöperate with the local health authorities in their efforts to control and abate communicable diseases.

"Fortunately, the first recommendation is already legally provided for. Section IV of an Act of 1902 reads as follows:

"'That the President is authorized in his discretion to utilize the Public Health and Marine Hospital Service in times of threatened or actual war to such extent and in such manner as shall in his judgment promote the public interest, without, however, in any way impairing the efficiency of the service for the purpose for which the same was created and is maintained.'

"Under date of April 6th, 1917, the President promulgated an order in accordance with the abovementioned provision in the law. It is only necessary for the Secretary of War to ask the Secretary of the Treasury to transfer, for the period of the war, the United States Public Health Service with all its functions, duties and properties, to the War Department.

"The practical working of these regulations should be something like the following:

"The local military health official should keep himself well posted on the communicable diseases in his district, and he should be vested with all authority necessary in the control of the same. He should have under his direct supervision and command, all new troops, both those volunteering and those drafted within his district. He should see that these men are not unnecessarily exposed to infection, and he should know to what infections and to what extent they have been exposed. From the time a young man is selected for the draft until he reaches the camp to which he is to be assigned, he should be under the direct charge, supervision and control of the local military health officer. When the squad from that vicinity is assembled, this official should either in person or by a deputy, conduct these soldiers to the camp to which they were assigned and turn them over to the medical officer of the camp with a full statement of all exposures to infection. When a soldier is furloughed from camp, he should be transferred to the command of the local health officer and should be under his charge, care and control during the whole of the time of his furlough. The local military health officers should make immediate telephonic or telegraphic reports to the State officer, and in case the military camp or cantonment is located in that State, directly to the Division Surgeon."

Attention is directed to the proposed bill of the National Educational Association in the following letter:

BUREAU OF MUNICIPAL RESEARCH
TRAINING SCHOOL FOR PUBLIC SERVICE
261 Broadway
New York City

May 8, 1918.

To the Editor of the American Journal of Public Health.

DEAR SIR: The Committee of the National Educational Association on the National Emergency and Education has prepared a tentative draft of a bill, the objects of which are briefly as follows:

To create a national Department of Education.

To appropriate money for the conduct of said Department.

To appropriate money for Federal aid to the states in the promotion of education.

The proposed bill presents certain features which are of vital interest to public health officers and to physicians generally. In brief, it contemplates the inclusion of the Bureau of Public Health Service of the Treasury Department under the proposed Department of Education. To those who have been interested and active in propaganda for a national Department of Health, this feature of the bill will have special interest since the passage of the bill in its present form would seriously hamper, if not actually defeat, the plan for a national Health Department.

It is urged that the tentative draft of this bill be carefully studied by public health agencies and medical societies, to the end that the framers of the bill may receive the advice of those best understanding public health needs. Copies of the bill may be secured from Superintendent J. A. C. Chandler, Richmond, Va., chairman of the committee which prepared the bill.

The Bureau of Municipal Research, which the writer represents, is desirous of securing competent opinion from physicians and public health authorities on the proposals of the bill and will be pleased to receive suggestions and comment from readers of the American Journal of Public Health.

Yours very truly,

DR. CARL E. MCCOMBS.

THE HEALTH PROBLEMS OF THE CIVIL POPULATION.

The meeting of the American Public Health Association at Chicago, October 14 to 17, 1918, promises to be one of peculiar national importance. Last year, as was fitting, we considered the immediate problems of military hygiene and sanitation created by the war. During the past twelve months it has become increasingly clear that the care of the health of our soldiers in the field is but a part of a much larger task imposed upon the medical and sanitary forces of the nation.

The sanitation of cantonment zones has broadened to include far-reaching plans for health reorganization in adjacent civilian communities. The protection of the soldier and the sailor from venereal disease has been found to involve the whole problem of social hygiene in the cities and the towns from which the recruits are drawn and to which they return on leave. The care of the tuberculous soldier and of the soldier afflicted with mental disease, as well as the increase of both types of disorder in their families which will inevitably result from war conditions, call for a broadly conceived expansion of our medical and educational and social service facilities for dealing with these problems. The supervision of hygienic and sanitary conditions surrounding munitions and shipyard workers, in which the U. S. Public Health Service is now taking an active part, requires vigorous and aggressive efforts. Finally the new value placed on human life by the world war justifies to the full the stirring summons of the Children's Bureau to a campaign for the saving of 100,000 infant lives.

To these tasks the public health workers of the country dedicate themselves anew in this critical year of the war; and the annual meeting of the Association will be so planned as to be of the most direct service to them in the fulfilment of their duty.

C.-E. A. W.

THE CHAMBERLAIN BILL AND VENEREAL DISEASE.

This bill, which was introduced into the House and Senate on May 25, provides for an Interdepartmental Social Hygiene Board representing the War, Navy and Treasury Departments. Its purpose is to protect the military and naval forces against venereal disease "and for other purposes."

The War and Navy Departments are directed to assist the States in isolating those infected with venereal disease.

A Division of Venereal Disease of the United States Public Health Service is created for research work, coöperation with State Health Departments, and controlling spread of venereal disease in interstate traffic.

A million is appropriated to the War and Navy Departments jointly. Another million is provided for distribution by the Treasury Department upon a population basis among the State Health Departments of such States as appropriate amounts equalling their respective quotas and $400,000 is provided for research in institutions of learning under the supervision of the Secretary of the Treasury. Finally, $200,000 is provided for the United States Public Health Service for the expenses of the new Division.

The bill was endorsed by the Conference of State and Provincial Boards of Health at Washington, June 6, 1918, and deserves the support of all sanitarians.

A JOURNAL OF THE PLAGUE YEAR WRITTEN BY A CITIZEN WHO CONTINUED ALL THE WHILE IN LONDON.*

By Daniel Defoe.

Published on the 17th of March 1722, "A Journal of the Plague Year: being observations or memorials of the most remarkable occurrences, as well public as private, which happened in London during the last great visitation in 1665. Written by a citizen who continued all the while in London. Never made public before."

I lived without Aldgate, about midway between Aldgate Church and Whitechapel Bars, on the left hand or north side of the street; and as the distemper had not reached that side of the city, our neighborhood continued very easy. But at the other end of the town their consternation was very great; and the richer sort of people, especially the nobility and gentry from the west part of the city, thronged out of town with their families and servants in an unusual manner; and this was more particularly seen in Whitechapel; that is to say, the Broad Street where I lived: indeed, nothing was to be seen but wagons and carts, with goods, women, servants, children, etc.; coaches filled with people of the better sort, and horsemen attending them, and all hurrying away. . . .

This was a very terrible and melancholy thing to see, and as it was a sight which I could not but look on from morning to night, for indeed there was nothing else of moment to be seen, it filled me with very serious thoughts of the misery that was coming upon the city, and the unhappy condition of those that would be left in it.

While the fears of the people were young, they were increased strangely by several odd accidents, which put altogether, it was really a wonder the whole body of the people did not rise as one man and abandon their dwellings, leaving the place as a space of ground designed by Heaven as an Aceldama, doomed to be destroyed from the face of the earth, and that all that would be found in it would perish with it. . . .

In the first place a blazing star or comet appeared for several months before the plague, as there did the year after another, a little before the fire. . . .

One time before the plague was begun (otherwise than as I have said at St. Giles's) I think it was in March, seeing a crowd of people in the street, I joined with them to satisfy my curiosity, and found them all staring up into the air to see what a woman told them appeared plain to her, which was an angel clothed in white with a fiery sword in his hand, waving it or brandishing it over his head. . . .

It is true when the infection came to such a height as I have now mentioned, there were very few physicians who cared to stir abroad to sick houses, and very many of the most eminent of the faculty

*This is the first of a series of extracts from the classics to be selected by Professor C. M. Hilliard of Simmons College.—Editor.

were dead, as well as the surgeons also; for now it was indeed a dismal time, and for about a month together, not taking notice of the bills of mortality, I believe there did not die less than 1500 or 1700 a day, one day with another.

One of the worst days we had in the whole time, as I thought was in the beginning of September, when, indeed, good people began to think that God was resolved to make a full end of the people in this miserable city. This was at that time when the plague was fully come into the eastern parishes. The parish of Aldgate, if I may give my opinion, buried above a thousand a week for two weeks, though the bills did not say so many,—but it surrounded me at so dismal a rate that there was not a house in twenty uninfected in the Minories, in Houndsditch, and in those parts of Aldgate parish about the Butcher Row and the alleys over against me. I say in those places death reigned in every corner. Whitechapel parish was in the same condition, and though much less than the parish I lived in, yet buried near 600 a week by the bills, and in my opinion twice as many. Whole families, and indeed whole streets of families, were swept away together; insomuch that it was frequent for neighbors to call to the bellman to go to such-and-such houses and fetch out the people, for that they were all dead.

And, indeed, the work of removing the dead bodies by carts was now grown so very odious and dangerous that it was complained of that the bearers did not take care to clear such houses where all the inhabitants were dead, but that sometimes the bodies lay several days unburied, till the neighboring families were offended with the stench, and consequently infected; and this neglect of the officers was such that the churchwardens and constables were summoned to look after it, and even the justices of the Hamlets were obliged to venture their lives among them to quicken and encourage them, for innumerable of the bearers died of the distemper, infected by the bodies they were obliged to come so near. . . .

I am now come, as I have said, to the month of September, which was the most dreadful of its kind, I believe, that ever London saw; for, by all the accounts which I have seen of the preceding visitations which have been in London, nothing has been like it, the number in the weekly bill amounting to almost 40,000 from the 22nd of August to the 26th of September, being but five weeks. . . .

Upon the foot of all these observations I must say, that though Providence seemed to direct my conduct to be otherwise, yet it is my opinion, and I must leave it as a prescription, viz., that the best physic against the plague is to run away from it. I know people encourage themselves by saying God is able to keep us in the midst of danger, and able to overtake us when we think ourselves out of danger; and this kept thousands in the town, whose carcasses went into the great pits by cartloads, and who, if they had fled from the danger, had, I believe, been safe from the disaster; at least 'tis probable they had been safe.

A dreadful plague in London was
  In the year sixty-five,
Which swept an hundred thousand souls
  Away; yet I alive!

STORIES FROM THE DAY'S WORK

Contributions to this section are invited.—*Editor.*

VACCINATION VS. PRAYER.

A decade or more ago we had in our city a religious sect known as Dowieites. They were followers of Dowie, a man who reviled doctors and threw the burden of preventing and curing disease upon the Lord.

His doctrine in part was reasonable inasmuch as he recognized such a thing as disease and that it was the result of sin. He enforced right living and of course got good results. He would make a whiskey-soaked tobacco chewer get on his knees and pray about a quarter of the time. The man would quit his vile habits and secure health, and for this beneficent service Dowie took only one tenth of the sinner's income for the rest of his natural life.

Dowie regarded all sickness as sin and therefore evil. He would not choose the lesser of two evils. He admitted that vaccination was a lesser evil than smallpox, but prohibited vaccination on the ground that it was an evil and all evil must be shunned. This was given as his reason for his opposition to vaccination. He probably had other reasons which, when analyzed, smacked of commercialism.

Dowie conducted a college on Michigan Avenue in which was taught his peculiar brand of religion and some other things. He had 270 students. One of them had the impudence to take on smallpox when he had been taught that such a thing was not possible. This student was in a room with three other students of Dowieism. I examined the three and found one had a good scar from a vaccination made in childhood. I told him he would probably escape smallpox, though his vaccination was pretty old. The other two had never been vaccinated. I promptly told them they would both have smallpox and be in the hospital within fourteen days. They had already been exposed several days. I was informed by them it would be impossible for them to have the disease as they were in constant prayer. Of course they refused vaccination. I told them to pray harder and oftener, but it was certain they would be sick within twelve days. I told the vaccinated one that he was in less need of prayer than the other two as I thought he was protected against smallpox. No vaccinations were permitted among the students. All were quarantined in the college which was largely a dormitory where the students lived. I examined all arms and found but 53 out of 270 without a vaccination. They were held under quarantine a month as eight cases developed making two fifteen-day periods of isolation. Only a few of the students were exposed to the disease as the first case was at one end of the building and not much visited. I visited those directly exposed (the room-mates of the patient) every day. They were faithfully praying and told me with glee that they had escaped. I told them what day they would experience a chill, headache and fever. I told the vaccinated one he would undoubtedly escape the disease. The morning of the day I had predicted the invasion of smallpox symptoms, I called and the two unvaccinated ones did not appear cheerful. They were so sick they could not deny the fact. They admitted that they were suffering and unable to sit up. I sent them to the hospital. The one with the old vaccination escaped the disease as I had predicted he would.

Did these people learn anything from this experience? They did not. They are still opposed to vaccination because it is an evil—and they must shun all evil.

HEMAN SPALDING, M. D.,
Chief, Bureau of Medical Inspection, Department of Health, Chicago.

A DIPHTHERIA MYSTERY.

While I was bacteriologist in a small city, about fifteen of positive throat swabs trickled into the laboratory, one or two a day, over a period of ten days. Nearly all of the cases were under the age of six, which at once threw suspicion upon the milk. A trip to the homes showed that the majority of householders af-

were dead, as well as the surgeons also; for now it was indeed a dismal time, and for about a month together, not taking notice of the bills of mortality, I believe there did not die less than 1500 or 1700 a day, one day with another.

One of the worst days we had in the whole time, as I thought was in the beginning of September, when, indeed, good people began to think that God was resolved to make a full end of the people in this miserable city. This was at that time when the plague was fully come into the eastern parishes. The parish of Aldgate, if I may give my opinion, buried above a thousand a week for two weeks, though the bills did not say so many,—but it surrounded me at so dismal a rate that there was not a house in twenty uninfected in the Minories, in Houndsditch, and in those parts of Aldgate parish about the Butcher Row and the alleys over against me. I say in those places death reigned in every corner. Whitechapel parish was in the same condition, and though much less than the parish I lived in, yet buried near 600 a week by the bills, and in my opinion twice as many. Whole families, and indeed whole streets of families, were swept away together; insomuch that it was frequent for neighbors to call to the bellman to go to such-and-such houses and fetch out the people, for that they were all dead.

And, indeed, the work of removing the dead bodies by carts was now grown so very odious and dangerous that it was complained of that the bearers did not take care to clear such houses where all the inhabitants were dead, but that sometimes the bodies lay several days unburied, till the neighboring families were offended with the stench, and consequently infected; and this neglect of the officers was such that the churchwardens and constables were summoned to look after it, and even the justices of the Hamlets were obliged to venture their lives among them to quicken and encourage them, for innumerable of the bearers died of the distemper, infected by the bodies they were obliged to come so near. . . .

I am now come, as I have said, to the month of September, which was the most dreadful of its kind, I believe, that ever London saw; for, by all the accounts which I have seen of the preceding visitations which have been in London, nothing has been like it, the number in the weekly bill amounting to almost 40,000 from the 22nd of August to the 26th of September, being but five weeks. . . .

Upon the foot of all these observations I must say, that though Providence seemed to direct my conduct to be otherwise, yet it is my opinion, and I must leave it as a prescription, viz., that the best physic against the plague is to run away from it. I know people encourage themselves by saying God is able to keep us in the midst of danger, and able to overtake us when we think ourselves out of danger; and this kept thousands in the town, whose carcasses went into the great pits by cartloads, and who, if they had fled from the danger, had, I believe, been safe from the disaster; at least 'tis probable they had been safe.

A dreadful plague in London was
  In the year sixty-five,
Which swept an hundred thousand souls
  Away; yet I alive!

STORIES FROM THE DAY'S WORK

Contributions to this section are invited.—*Editor.*

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HEMAN SPALDING, M. D.,
Chief, Bureau of Medical Inspection,
Department of Health, Chicago.

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While I was bacteriologist in a small city, about fifteen of positive throat swabs trickled into the laboratory, one or two a day, over a period of ten days. Nearly all of the cases were under the age of six, which at once threw suspicion upon the milk. A trip to the homes showed that the majority of householders af-

fected patronized one milk dealer, who operated five wagons, serving about fifteen hundred customers.

Here was a puzzling situation, for if this milk was the source of the disease why didn't we have hundreds of cases instead of fifteen, and why didn't the cases break out in one great explosion when the milk was infected instead of popping up sporadically? To make matters more interesting, the chairman of the board of health insisted that there wasn't any diphtheria. He was school physician, and hadn't found a case of diphtheria.

The mystery was complete when I examined throats at the dairy and found that the milk was being pasteurized, and that there wasn't a sore throat in the place. However, I took swabs from all the milk handlers, and found a healthy carrier. His throat was clear but his nose was badly infected.

We quarantined him, and the epidemic stopped short.

But how did the man infect over ten days a milk supply reaching hundreds of families so as to cause only fifteen cases?

He didn't infect the milk supply at all! He infected the lip and outer neck of the bottle. Part of his job was to examine the bottle for cracks. He chewed tobacco, probably wiped his mouth with his hand, lifted a bottle by the neck, and infected it. The careless mother who failed to wash the bottle, poured the bacteria into the pitcher with the milk.

A. W. Hedrich.

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AID TO INCREASE APPROPRIATIONS.

When the annual budget for the Palo Alto (California) Health Department, for the fiscal year 1915–16, was prepared, it included a considerable increase in both salary and expense items. The appropriation asked represented an expenditure for health of about 60 cents per capita per annum.

Just before the adoption of the annual municipal budget, of which this was a part, one of the councilmen sent out a written statement charging that the Health Department expenses were extravagant for a city of that size (5,500), and citing the very much smaller health expenditures of seven other California cities of about the same population. He urged that the expense be cut in half.

Several councilmen requested that I prepare immediately a statement of facts and figures to meet the statements of the opposing councilman. Less than forty-eight hours were available, but in that time the death records of the seven cities were analyzed, and reduced to diagrams showing the total death-rate, and the death-rate from preventable causes. One diagram showed the total death-rate of Palo Alto and the seven cities compared for the previous ten years.

The diagrams were blueprinted, and the blueprints, together with brief written descriptive matter, and a tabular statement of appropriations and expenditures for the past five years, were neatly bound in a folder, and were given to each councilman just ten minutes previous to the meeting.

The comparison was so obviously to the advantage of Palo Alto that the objecting councilman, realizing there was no hope of decreasing the appropriation, merely moved to strike out the increase, which was voted down by a vote of 12 to 3; the increased budget was adopted with but one dissenting vote.

Health officers should make more use of brief graphical methods of presenting their arguments for appropriations. They will find it pays, and will often surprise an increase out of the city fathers. They like to be shown.

Harold F. Gray,
District Health Officer,
Chico, Calif.

*

KEEPING THE VOTER HAPPY.

In a small town where the continuance of full time health work is subject to vote each year at the annual town meeting and where a great many of the voters are men situated away from the center of the village on farms the health officer faces the problem of letting these men know what the department is doing and of gaining their good will. The farms upon which these men live constitute a sanitary unit by themselves. People who drink water from a well that has been in use for generations and use the privy of their forefathers are apt to be a bit conservative when it comes to spending money for modern health work.

This was the situation that faced the Health Department at York, Maine. After a consideration of the problem it was decided to send a letter signed by the health officer to every voter in town. This letter was made as personal as possible and, in addition to calling attention to the accomplishments of the department during the previous year, it was made plain that we were there to serve them and were willing and anxious to do so. We would be glad to analyze their milk for them to determine which were their profitable cows; if they were thinking of building a new cow barn we would welcome the opportunity to get the most modern and approved plans for them and assist them in any way possible. They were invited to visit the laboratory whenever they were in the village and we would to explain to them how we did things.

A week after these letters were sent out I received a letter from a man living five or six miles out in the country and he thanked me for my kindness in writing him and for the invitation to visit the laboratory. He also gave me some valuable information about some lumber camps situated on the water shed which enabled us to do away with a potential source of typhoid fever. The department was continued.

Aaron P. Pratt, C. P. H.,
Formerly Health Officer,
York, Maine.

*

CLEANING UP THE NEGRO SECTION.

The Durham County and City Health Department was organized May, 1913. The greater part of the first year's work was spent in organizing and getting information on the work to be done. As the U. S. Bureau of Census in 1910 gave the city of Durham a colored population of 6,869 and a death-rate of 26 per 1,000, special attention was given to investigating the cause of the high death-rate among the colored people. Many things were found. It was decided that educational work should be pushed, and a special colored visiting nurse was employed for the work. Leaflets and other printed matter on health were distributed in their homes; health lectures were given in their schools and churches; and house to house visits were made by the nurse instructing them in health and sanitary matters.

In 1915 the colored death-rate was 23. In June, 1916, our educational work looked as if it were having effect, and would give results. A meeting of the representative colored men was called to meet with a committee of white ladies from the Civic League and a committee from the Health Department. The necessity of some means of caring for the tuberculous Negroes was presented to them. The colored people responded with a seven room annex to their hospital (10 beds), the Civic League supplying the furniture and equipment, and the Health Department contributing $50 per month toward the running expenses. In less than forty days the whole scheme was carried through and the hospital doors were opened to receive patients. In 1916 our colored population, estimated by U. S. Bureau of Census, was 9,714. Our colored death-rate had dropped from 23 to 18.11 per 1,000.

April 21 to 28, 1917, was observed as annual health and clean-up week. The following committees were organized into a coöperative campaign: the Colored Business Men's League, the Colored Mother's Club, the Ladies' Board of the Lincoln Hospital, the Faculty and Children of the Graded School, the colored insurance companies, the colored physicians and nurses, and the Health Department. Sunday prior to the campaign the pastors of the colored churches preached special sermons on cleanliness and health. Great impetus was given to the work by their sermons. The week prior to clean-up week, six public meetings were held at which the city colored nurse made daily reports of inspections and progress of the work. These meetings were well attended, the program consisting of patriotic music, short talks by leading colored business men, physicians, teachers and nurses. Moving pictures and lantern slides were also used to impress upon the masses the dangers resulting from flies, mosquitoes, etc. The city was divided into four sections, and the colored homes visited and urged to clean up. To encourage beautifying their homes, flower seed was distributed at the schools to the children. Lime stations were located at convenient places where the colored people could apply and get lime free for white-wash and other purposes. Thirty-one barrels were distributed through these stations. The results were that practically all outhouses, fences, trees and telephone poles in the vicinity of their homes received a

coat of white-wash. The main thorough-fare running through the colored district was spoken of as "The Great White Way." Many of the houses were freshly painted inside and out as a result of this campaign. The visiting committee found that more than 2,000 homes had been cleaned and otherwise greatly improved, and the people were proud of their work.

I am expecting another drop in our colored death-rate for this year. I believe that if any material reduction in the death-rate of our southern states is made it will be through work done with the colored people. I am glad to say that the North Carolina State Board of Health has a number of colored workers in the field.

A. Cheatham, M. D.,
Health Officer,
Durham, N. C.

ASSOCIATION NEWS

By the Secretary, A. W. Hedrich.

A meeting of the Council of the Food and Drugs Section of the American Public Health Association was held recently in New York City, for consideration of business relating to the Section.

Dr. Arthur J. Cramp was elected chairman of the Committee on Drugs and Nostrums, in place of John Phillips Street, resigned.

Dr. Herbert D. Pease was made a member of the Committee on Conservation and Development of Food Supplies.

Vacancies on the Committee on Control of Milk and Dairy Products were filled by appointing Joseph Race and Dr. Harry W. Redfield.

Features for the program of the next meeting of the Section were discussed, and as a result an attempt will be made to lay special emphasis on the application of the laws of nutrition to household economics; the bringing of the truths as to the necessity for and benefits from cold storage to the attention of the consumer; and consideration of all phases of the subject of garbage disposal and utilization. *J. O. Jordan.*

HELP WANTED.

In order to help relieve the shortage of sanitarians due to the war, free help wanted announcements will be carried in this column until further notice. Copy goes to the printer on the first of each month.

In answering keyed advertisements, please mail replies separately.

The Health Employment Bureau also sends lists of applicants to prospective employers without charge.

A full-time medical health officer is wanted in a city in Illinois. Must acquire medical license in Illinois. Salary, $3,000 per year. Address D. S. C., No. 135, care of this Journal.

A health officer and city physician is wanted in the Middle West. Salary, $3,000. Address S. A. M., No. 136, care of this Journal.

First-class sanitary engineer, who can handle laboratory end of water examinations, is wanted by a Nebraska Health Department. Salary, $2,000. Address W. F. W., No. 137, care of this Journal.

A bacteriologist is needed in a Nebraska Health Department. Salary, $2,400 per year. Address W. F. W., No. 137, care of this Journal.

Several men are wanted during the summer for anti-malaria field work. Third and fourth year students in sanitary engineering, bacteriology, or allied sciences are desired as inspectors of mosquito breeding places near Norfolk. Salaries range from $3.60 per day to $165 per month. Address H. V. W. H., No. 138, care of this Journal.

A chemist and bacteriologist is wanted in Illinois Must be qualified to make chemical and bacteriological examinations of water, milk, sewage, and of pathological specimens. Salary, $2,000 per annum. Address D. S. C., No. 139, care of this Journal.

A city in Illinois wants a high-grade sanitary engineer to act as chief of Division of Sanitary Engineering. Salary, $3,600 per annum. Address D. S. C., No. 140, care of this Journal.

The Sanitary Corps of the United States Army needs graduate sanitary engineers of at

least three years' practical experience in public heal h work. Operators for water and sewage purification plants are also needed for duty in this country and abroad. These should be men preferably over draft age or those who are rejected for physical defects. Send applications to Lt. Col. William Wrightson, Surgeon General's Office, War Department, Washington, D. C.

A government bureau requires the services of a medical man for the purpose of preparing reviews of medical literature. Salary, $2,500. Address W. F. B., No. 141, care of this JOURNAL.

The State of West Virginia requires a director of the public health laboratory. Beginning salary, $2,500 to $3,000. Address J. L. S., No. 142, care of this JOURNAL.

PERSONAL NOTES.

Dr. R. K. McClanahan succeeds Dr. W. E. Kaser as secretary of the New Mexico State Board of Health.

Captain Millard Knowlton has been ordered to Topeka, Kan., for duty as epidemiologist in charge of venereal disease work.

Dr. R. W. Garnett has resigned his position as whole-time health officer of Fauquier County, Virginia, to accept a place with the State Board of Health of Virginia. He will have charge of the medical inspection and epidemiological work.

Dr. S. A. Munford, of Ithaca, N. Y., has been commissioned captain in the Medical Reserve Corps.

Mr. Harry Y. Carson, formerly with the Central Foundry Company of New York City, is with the Palestine Red Cross Relief Expedition.

Mr. Gustave R. Tuska of New York City has been commissioned as major in the Engineers Corps.

Dr. Guilford H. Sumner of Des Moines, Iowa, has been reappointed as secretary-executive officer and state health commissioner of Iowa. His new term begins July 1, 1918, and ends July 1, 1923. Dr. Sumner has already served eight and one-half years as commissioner and secretary of the State Department of Health.

Dr. Vernon Robins of Montgomery, Ala., has accepted the position of head of laboratories at the Health Department of Louisville, Ky.

Mr. J. J. Weber of New York City has taken the position of assistant director of the Boston Dispensary and eastern representative of the *Modern Hospital*.

Mrs. B. A. Haasis, formerly Miss Bessie Ely Amerman, has been made educational secretary of the National Organization for Public Health Nursing.

Dr. Arthur Lederer has resigned as director of the Hygienic Laboratory of West Virginia, and has accepted a position with the Hygienic Laboratory, U. S. P. H. S.

Dr. C. F. Boldman has resigned as director of Public Health Education at New York City Health Department.

*

The following were elected to membership in the Association during May, 1918:

Corporate Members:

The Columbian National Life Insurance Co., Boston, Mass.

The Mutual Life Insurance Co. of New York, New York City.

The Travelers Insurance Co., Hartford, Conn.

Individual Memberships:

Charles A. Hunter, State College, Pa., Bacteriologist, Pa. State College.

Kenneth R. Glennan, M. D., U. S. Public Health Service, Houston, Tex.

Garabod S. Ghazarian, M. D., Providence, R. I.

Edwina M. MacDougall, B. S., Whitewater, Wis.

Charles R. Carraway, M. D., Laurel, Miss.

Bernard Kohn, M. D., Philadelphia, Pa., Medical Inspection Public Schools.

J. G. Saam, M. D., Eveleth, Minn., City Health Commissioner.

T. W. Margerum, Princeton, N. J., Health Officer.

Josse M. Worthen, M. D., Midland Park, S. C.

John S. Hibben, M. D., Pasadena, Cal.

John E. Dowd, Brooklyn, N. Y., Chemist, Mt. Prospect Laboratory.

L. A. Cornelius, Grand Rapids, Mich., Designer of Plumbing Goods.

Cecil K. Maxwell, M. D., Kellyton, Ala., Health Officer.

James Krom, M. D., Saugerties, N. Y.

BOOKS AND REPORTS REVIEWED

Social Diagnosis. *Mary E. Richmond. New York: Russell Sage Foundation. 511 pp.*

During recent years progressive social workers have been eagerly anticipating the publication of the results of Miss Richmond's varied experiences and studies and it is not surprising that her work has immediately become a classic. A knowledge and mastery of social diagnosis clearly constitutes a part of the equipment of every social practitioner, and ignorance is inexcusable since Miss Richmond has set the subject forth in so clear and convincing a manner.

The significance of the book to the public health man needs, however, to be pointed out. He knows probably that there is as great a distance between the ancient dole and the modern system of relieving persons in distress, as there is between fetishism and modern hygiene, but he does not always realize how closely akin the problems of the social worker are to those of the hygienist. He will therefore learn with interest the extent to which public health agencies are used by agencies doing work with children, family work and medical-social work, as, for instance, in 2,800 cases studied, 1,828 medical sources were consulted as against 743 work sources. He will immediately agree with the writer that the non-medical worker should never atempt to make a medical diagnosis, but he should be more impressed with her arraignment of the non-social attitude of many practitioners, the frequency of conflicting diagnoses and prognoses and failures in keeping correct medical records. The claim that both groups of public servants—the social and the medical—will serve the public best when they have thoroughly mastered the technique of working together implies a new spirit on the part of many public health officials. Miss Richmond points out that "with the new interest in public health and the developments of public health departments of the modern type, there should be many ways in which the non-medical social agencies and these departments can be of service to one another." She gives in illustration a brief description of the services rendered the New York Charity Organization Society by the city's Health Department.

The increasing emphasis placed on the social value of their work by public health officers will bring speedier returns when the principles of social diagnosis are more clearly understood by them and more sympathetically applied. Miss Richmond's book should be of universal service in bringing about more effective coöperation between the two great groups of public agencies.

Marion Talbot.

The University of Chicago.

Animal Parasites and Human Disease. *Asa C. Chandler, M. S., Ph. D., Instructor in Zoölogy, Oregon Agricultural College, Corvallis, Oregon. John Wiley & Sons, Inc., London: Chapman & Hall, Ltd., 1918. Pp. 570+XIII. Price, $4.50 net.*

It is the aim of this volume to present the important facts of parasitology, as related to human disease, in such a manner as to make it readable and useful not primarily to the parasitologist, but to the public health and immigration service officers; to the physicians who are concerned with something more than their local practice; to teachers of hygiene, domestic science, or other subjects in which health and preventive medicine are important; to college and high school students; to the traveler; and to the farmer or merchant who is interested in the progress of science and civilization. This object has been accomplished, but the author has evidently had frequent difficulty in translating technical subjects into lay language.

Chandler believes that the crying need of the present time is not so much additions to our knowledge of the cause, control and prevention of diseases, much as this is to be hoped for, as it is the efficient application of what we already know. He states that "Popular ignorance of diseases, even such common ones as malaria and syphilis, is nothing short of appalling. This ignorance is by no means confined to the poorly educated masses; it is wide-spread among educated, college-bred people, and piteous as it may

seem, is characteristic of many professional men, among them even physicians of good reputation."

Emphasis is placed upon the importance of the subject, and the wide-spread distribution of the parasitic diseases of man. It is plain that with modern facilities for communication and with the extent of foreign immigration at the present time, there is no part of the world so remote that the things which affect it may not also affect any other part of the world if conditions are suitable.

The book deals in an interesting manner with the protozoa, worms and arthropods, and also the diseases they induce. Questions of treatment, prevention, and sanitation are discussed. The text is clear, and contains few inaccuracies. In the historic introduction, one misses mention of the pioneer work of Theobold Smith. The book is well printed and edited and effectively illustrated. It should serve a useful purpose.

M. J. Rosenau, M. D.

Dietotherapy. *By William E. Fitch and forty collaborators. D. Appleton and Company. New York and London. 1918. Three volumes, 816, 798, and 929 pages. Price, $21.00 net (by subscription only).*

This is an encyclopedic work in which every conceivable aspect of food and nutrition receives extended attention. The first volume deals with the chemistry and sources of food, the second with the physiology of nutrition in health, and the third with the special problems of disease. There is inevitably a wide difference between the spirit of the treatment in one part and another. Sometimes the presentation is popular and entertaining, elsewhere it is more rigorously scientific. The chief place for such a set of books would seem to be in the reference departments of public libraries.

When a work so large and costly as this is produced it is proper to judge it by exacting standards. It should be so good as to leave no excuse for a competitor. It seems to the reviewer that this level of merit is not attained. Without reflecting upon the able collaborators it may be permissible to express regret that some of the foremost exponents of these subjects have not been induced to contribute. McCollum, Forbes, Lusk, Mendel, Osborne, Underhill, Taylor, Sherman, Folin, F. G. Benedict, Joslin and others readily come to mind. It is true that the studies of these men receive due notice but it is a pity that we have not their direct testimony. The bibliography is not always well developed. (For example, there are no references on tea and coffee more recent than 1901.) There are many misprints which are particularly unfortunate when proper names are involved. The tables in the section on Mineral Constituents are unintelligible. The work has so much value that its defects are the more distressing.

P. G. Stiles.

Tested Menus and Recipes. *Annie L. Weeks, University of Rochester and Mechanics Institute, 1717. 19 pp. 10 cents.*

This bulletin is a demonstration that attractive and palatable menus can be planned from a low cost dietary. Menus for an entire week are given for different types of families. In addition to a number of American recipes, some useful Italian, Polish, English, German and Syrian recipes are also given.

D. Greenberg.

The Rockefeller Foundation. A Review of Its War Work, Public Health Activities and Medical Education Projects in the Year 1917. *G. E. Vincent, President of the Foundation. New York, 1917. Pp. 47.*

Of the many projects and activities which are being carried on, the Foundation is devoting by far the largest part of its available resources to the support of war work. Some of the specific activities carried on are (1) the War Hospital equipped for the demonstration of the technique of the Carrel-Dakin treatment, (2) the preparation and distribution of sera for combating meningitis, and pneumonia, (3) aiding the Government in carrying out its mental hygiene program, (4) antituberculosis work in France, (5) the establishment of a School of Hygiene and Public Health, (6) campaign against hookworm, which extends to twenty-five foreign countries and twelve American states, and (7) maintenance of medical schools in China.

D. Greenberg.

PUBLIC HEALTH LABORATORY NOTES

Abstracts by ARTHUR LEDERER, M. D.

Superiority of Inoculations with Mixed Triple Vaccine.—The author carried out a series of inoculations in a number of men and rabbits with vaccines prepared from cultures of two or all three of the bacilli (B. typh., B. paratyph. A and B. paratyph. B), varying the order of their introduction in the successive immunizations of different groups of rabbits. The details of all the experiments are given in full and the results are discussed. When a mixed vaccine is used the immunity obtained for each of its constituent bacilli is at least as good as, and very often greater than, that obtained against any of these organisms when it is employed alone in the same dosage for a first immunization. When single vaccines are employed in succession and the immunizations are carried out independently, the response is greatest to that vaccine which is introduced first. To the later immunizations with other microörganisms the specific response is almost always less intense. It has associated with it, however, as a secondary result the production of a new rise of variable extent in the agglutinin titer of the serum of the bacillus of the first immunization.—W. C. Davison, *Arch. Int. Med.*, 21, 437 (1918).

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Ascending Cultures of Bacteria.—Certain bacteria possess the faculty of climbing to the surface of the tube of agar when only the condensation fluid of the bottom of the tube was inoculated. Bacteria can be classed by this phenomenon as climbing and non-climbing, and this supplies another element for differentiating them. It is the most convenient and the most certain method for distinguishing the proteus, and obtaining it in pure cultures. The bacteria of the typhoid group and certain races of colon bacteria are of the ascending type.—C. Gorini, *Policlinico*, 25, 173 (1918).

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A Bacteriological Method Useful for the Study of other Microörganisms.—Description of a method of growing bacteria in a thin film of medium upon a microscopic slide and later stained. It is valuable for the rapid determination of the number of organisms in any richly seeded material, and also for the study of the morphology of the single cells or of the colonies.—F. M. Bachmann, *Am. Jour. Botany*, 5, 32 (1918); *Chem. Abst.*, 12, 812 (1918).

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Ameba Found in Trench Fever.—Triudin is convinced that the infectious disease he describes, known as "trench fever," is a disease *sui generis*. Also that the ameba he found in the blood stands in some casual relation to it. He found the protozoon in 75 per cent of his twenty-four cases, but exclusively during the first three days of the disease. The blood showed the characteristics of a severe blood disease. Coagulation was retarded; in some it began at the tenth minute, in others not until the twenty-third. The average was eighteen minutes.—P. N. Triudin, *Russkiy Vrach, Petrograd*, 16, 566; *Jour. Am. Med. Assn.*, 70, 1271 (1918).

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Bacteriology and Immune Reactions of Rubeola and Rubella.—Diplococci may be isolated from the blood of patients with rubeola and rubella. While the two organisms are similar in their cultural characteristics they differ in size, shape, capsule, formation, filtrability, viability, virulency, and immunity reactions.—Ruth Tunnicliff, *Jour. Infect. Dis.*, 22, 462 (1918).

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Are All the Bacilli Found in the Sputum Virulent?—The investigations have revealed that in the majority of open cases of pulmonary tuberculosis, the tubercle bacilli which could be isolated on artificial mediums from the sputum were virulent enough to produce systematic tuberculosis in guinea-pigs, by means of doses as small as 0.000,001 mg.; and that the range of variation of virulence was very small, as was also pointed out by Gilbert and Gregg, who found it to lie between 10 and 120 bacilli. If the virulence of the bacilli as cultivated on artificial mediums is

a direct expression of their virulence in the sputum, there is only one conclusion to be drawn from the foregoing findings, as viewed from a practical standpoint, and that is, that in open cases of pulmonary tuberculosis the tubercle bacilli discharged by droplet or by expectoration when still uninfluenced by drying and light, are a danger to mankind, through direct transmission at least. It seems justifiable to conclude that the tubercle bacilli found in the sputum of patients in open cases of pulmonary tuberculosis (provided the bacilli capable of artificial cultivation are a true index of those existing in the native sputum) vary only slightly in virulence for guinea-pigs, and are for practical purposes nearly all pathogenic.—H. J. Corper, *Jour. Am. Med. Assn.*, 70, 1281 (1918).

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Vaccine in Prevention of Whooping-Cough.—At the Children's Home in Schenectady, one of the forty-six inmates developed whooping-cough on or about November 27, 1917, but because of failure of diagnosis was allowed to mingle for nearly a week with other children, after which he was isolated in a separate building. It was later learned that during this time he was known to have whooped and vomited. An epidemic of the disease was well under way in the city at the time, and several of the whooping-cough patients had been attending the school to which the children of the home were sent daily. Seven weeks after the development of the case, there were nearly 400 records of pertussis at the city health department. December 3, 1917, 31 who gave no record of having had whooping-cough were inoculated, each with 50 million plain pertussis vaccine (stock). No reactions were noted, but one child complained of a sore arm. Up to the present time (January 24, 1918) not a single case has developed in the home. The original case was given one dose of vaccine immediately after the diagnosis was made and ceased whooping at the end of one week. The vaccine was not repeated.—F. Vander Bogert, *Am. Jour. Dis. Children*, 15, 271 (1918).

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Laboratory Diagnosis of Spirochete Jaundice.—The authors found in 102 men with infective jaundice that the spirochetes were present in the urine in largest numbers between the fifteenth and twentieth day, although in the severe cases the urine contained spirochetes during the jaundice phase. They persist long in the urine; some few were found as late as the thirty-fifth and forty-fourth days. The spirochetes are very fragile and disappear from the urine as it ferments. By adding to the urine in the vessel in which it is collected 5 per cent of a 40 per cent solution of formaldehyde the urine is prevented from fermenting while the spirochetes are fixed at the same time. Centrifugation can be dispensed with by using the ligroin method to collect the spirochetes in the upper part of a test tube. The preferable staining technic seems to be with silver preceded with tannin, followed by thorough rinsing, with care not to allow boiling on the slide—the usual Fontana and Tribondeau technic. Besides the spirochete that seemed to the specific one, Vincent's spirillum was numerous.—P. Pagniez, A. Cayrel, P. P. Levy and J. de Leobardy, *Bull. de la Soc. Med. des Hop.*, Paris, 42, 31 (1918).

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Tuberculosis and Blastomycosis.—The lungs of tuberculous cattle constantly contain blastomycetes and other fungi. Among the blastomycetes are some species pathogenic for laboratory animals and fowls, and in shape and cultures not distinguishable from the Saccharomyces Neoformans. Associated with tubercle bacilli, animals inoculated died more rapidly than the controls inoculated with the tubercle bacilli alone, and the tissues show both diffuse tuberculosis and blastomycosis.—F. Sanfelice, *Annali d'Igiene, Rome*, 28, 41 (1918); *Jour. Am. Med. Assn.*, 70, 1267 (1918).

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Glanders in Felines.—The author found signs of acute glanders in the lungs of a tiger dying in captivity at Rome, and others have reported similar findings in lions and cats. The zoölogical gardens at Rome recently had an epizootic of acute glanders among the lions and tigers but the other animals escaped. Twelve of the large felines were affected and a number died. Cats inoculated from them developed the same set of symptoms in from three to five days, while other cats infected naturally from these cats showed an incubation period of six or seven days. The temperature, however, ran up the end of the fourth day.—M. Carpano, *Annali d'Igiene, Rome*, 28, 68 (1918); *Jour. Am. Med. Assn.*, 70, 1267 (1918).

Economy in the Colloidal Gold Test.—The colloidal gold solution which was formerly purchased by the Buffalo Health Department at $8 per liter can now be prepared for 5 cents per liter and a more satisfactory product obtained. The technique for preparation:

"A liter beaker should be rinsed out with triply distilled water and then filled to the mark with triply distilled water, and after the temperature has reached 50° C. the gas flame is increased. At 60° C., 10 cc. of 1 per cent gold solution and 7 cc. of 2 per cent potassium carbonate solution are added. The solution should remain perfectly clear. At 80° C., while stirring with thermometer, 10 drops of 1 per cent oxalic solution are added. At 90° C. the flame is withdrawn and 5 cc. of (1–40) formaldehyde solution slowly added, a drop at a time. If a pink color makes its appearance before all the reducing agent has been added, stop at once, for reduction will continue to the final end point, which is marked by the production of a brilliant, clear orange-red solution. Best solutions are those in which color changes develop slowly."—*Buffalo Sanitary Bulletin*, March 31, 1918. (*D. G.*)

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Skin Infection Due to Bacillus Mucosus-Capsulatus.—A peculiar ulcerative lesion of the skin following a suprapubic prostatectomy, in a man eighty-three years of age, was found to yield an organism resembling the bacillus mucosus-capsulatus. After running a clinical course of over three weeks with no improvement, it responded quickly to a single cauterization with stick silver nitrate.—E. A. Graham, *Surgery, Gynec. and Obstetrics*, 26, 394 (1918).

✱

How to Breed Mice.—In breeding mice, one should be sure to use strong, healthy animals. If the mice are obtained from an unknown stock, they should be isolated for two weeks, and if any of them become sick during this time they must be discarded. Unless this precaution is taken, an epidemic will devastate one's stock. There are two ways of breeding mice: the family group method and the individual method. The mice should be inspected daily. If a mouse shows evidence of disease, it should be immediately isolated, and if severely affected, it should be killed at once. The three cardinal rules of successful mouse breeding are cleanliness, close observation, and isolation.—Conrad Hon, *Jour. Am. Med. Assn*, 70, 1225 (1918).

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Facilitating the Serum Diagnosis of Syphilis under War Conditions.—According to Rhamy (*Jour. Am. Med. Assn.*, Nov. 17, 1917, p. 1728) guinea-pig complement can be preserved in a mixture consisting of 1 part of the fresh guinea-pig serum and 1.5 parts of a 10 per cent sodium acetate solution in 0.9 per cent saline for a considerable length of time at room temperature, and the acetate does not interfere with the fixation reaction. The author has confirmed Rhamy's statement and can add that the same is true of human complement. By mixing fresh serum with the acetate saline solution in equal parts the complement remains perfectly active at room temperature for at least five days, and the results of the tests made with the acetated serums are no different from those obtained with the same specimens in fresh state without the acetate. It is advisable, therefore, to preserve a specimen intended for transportation for some distance in a sodium acetate saline solution while the specimen is perfectly fresh. Sodium acetate may also be added directly to the blood while the patient is being bled for the test.—H. Noguchi, *Jour. Am. Med., Assn*, 70, 1252 (1918).

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To Send Serum by Mail for Wassermann Test.—R. Tsuneoka and T. Yotsumiya relate that a safe and certain means for sending serum to a laboratory for testing is to soak up the serum into blotting paper and allow the paper to dry in a dark room at a temperature of from 80° to 86° F. Serum thus dried into the blotting paper can be kept without deterioration for five or six days. When the test is to be applied the serum is dissolved out of the paper by soaking in sterile saline and squeezing the paper. An abstract of their article is given in the *China Medical Journal* which publishes regularly, in pamphlet form, English abstracts of the leading articles in the current Japanese medical periodicals.—*Jour. Am. Med. Assn.*, 70, 1255 (1918).

PUBLIC HEALTH NOTES

Abstracts by M. E. Champion, M.D., M. P. Horowitz and David Greenberg.

Bovine Tuberculosis.—In 1917 among 40,000,000 hogs reaching packing plants 3,974,000 were found tuberculous by veterinary inspection. These hogs became infected according to the author by eating the feces of tuberculous cows. The consensus of opinion is in favor of the testing on every farm for tuberculosis but this would be a stupendous task for there are more than 6,000,000 farms in the United States. The hog, under present agricultural practices, where hogs and cattle are associated, can be made a practical tester,—the decision of the pig being recorded on his own post-mortem when he is brought to the slaughter house.

If every farmer immediately before shipping his hogs off to market could be induced or required to tag each hog showing the owner's name and address, it would be a simple matter to trace back all tuberculous hogs to their source, and by education and coöperation with the farmer, find the cows which are the reservoirs of the infection.—Rogers, B. R., *Amer. Journal of Veterinary Medicine*, 1918, XIII, No. 2.

(*D. G.*)

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Rural School Hygiene in Switzerland.—The medical inspection of country schools, a difficult problem everywhere, is thus handled by the canton of Vaud in Switzerland, C. Pahnd in an article in the *Revue médicale de la Suisse Romande* (Geneva, March, 1918) outlines their thorough system of physical examination of school children. This examination occurs every year and includes a skin tuberculin test, given, of course, with the parents' consent. The children found to be below par are reëxamined after a few months. An individual record is kept for each child of age, weight, height, chest measurement at expiration and inspiration, vision, hearing, aptitude for work, and previous tuberculin test. The teachers superintend the weighing of the children once a month; the height is recorded once in six months and the school rating once a quarter. Sun baths and gymnastics are given daily in pleasant weather, the children being in bathing trunks. There is a yearly conference with the parents to explain the advantages of the system. Two thirds of the parents gave their consent for the tuberculin tests. Finally, as the writer states, the system is completed and stabilized by a form of sickness insurance carried by the canton and the state. At an expense of 40 to 80 cents the child is insured against sickness so that when medical care is indicated from the results of the physical examination in the schools, the cost is taken care of from this fund.

(*M. E. C.*)

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To Guard Health of 250,000 Boys on Farms.—Inasmuch as 250,000 boys will work on farms this summer to aid in winning the war, each state director of the Boys' Working Reserve has been asked by the Council of National Defense to inspect and certify the farms where the boys will be placed. Special attention will be given to the prevailing housing conditions, and a separate bed will be required for every boy. The water supply and milk supply must be safe, and the privy must be satisfactorily located with reference to the well. Every boy is urged to be vaccinated against typhoid and paratyphoid.—*The Official Bulletin*, May 6, 1918.

(*M. P. H.*)

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WISCONSIN HEALTH NOTES.

Lieut. W. F. Whyte, M. D., president of the Wisconsin State Board of Health, is now attached to the medical staff at Camp Dix, Wrightstown, N. J.

A. A. Sliwinski, bacteriologist of the state branch laboratory at Rhinelander, Wis., has resigned to enter the military service.

With the endorsement of the State Board of Health, the Wisconsin Department of Agriculture has issued an order requiring the muzzling of all dogs in nine southern Wisconsin counties for a period of 120 days. Many cases of rabies, resulting in cattle losses and injury to humans, provoked the action of the state.

Wisconsin was admitted recently to the Birth Registration Area, following an intensive investigation by Census Bureau agents into the birth records of the state, which resulted in a

percentage of more than 90 per cent completeness of registration. The law will be strictly enforced.

The State Board of Health will continue its health exhibit at the state fair and many county fairs this year. New health models and charts have been prepared to make the display more attractive and complete. A state Public Health Building of permanent design is in prospect upon the grounds of the Wisconsin State Fair.

The Plumbing Division of the State Board of Health is assisting several county fair associations in designing a sanitary toilet building, equipped with plumbing, adequate for the needs of a congested traffic common to fairs.

The State Board of Health issued during May a new bulletin entitled, "Wisconsin Code for Rural School Privies," promulgating a definite type of privy which must be followed when building new or remodeling old outbuildings in rural school districts. Seventeen sketches for contractors' use accompany the specifications, which are very complete and calculated to fulfill every requirement in preserving a sanitary environment. The code is the outgrowth of a strong demand for more sanitary school toilets voiced by school authorities, and its preparation was urged by the State Department of Public Instruction, the State Department of Engineering, and the Wisconsin County Superintendents' Association.

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New Jersey Attacks Social Diseases.—A special committee was recently appointed by Dr. Charles V. Craster, health officer of Newark, N. J., to consider conditions of the city and how the local Department of Health could best cooperate with the United States Army and the Police Department in securing the more effective solution of the venereal disease problem.

The committee recommended that a bureau of venereal disease be created in the Department of Health with adequate personnel and equipment. The personnel is to include a nurse for follow-up work which was made mandatory by the recent state law concerning venereal disease control.

The committee urged active steps for the suppression of prostitution by examination of arrested prostitutes, their isolation and treatment, and custodial care of feebleminded prostitutes; also that physicians be required to report cases of syphilis and gonorrhea and that compulsory and systematic treatment be provided for the infected persons for the sake of public health.

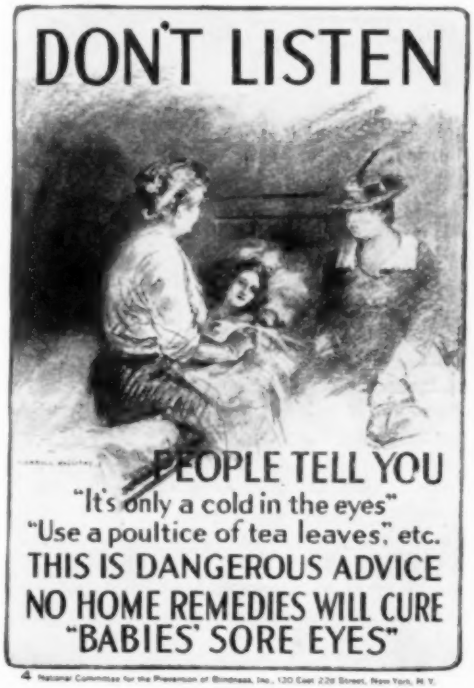
The educational measures approved by the committee include posting of placards in men's lavatories and elsewhere, distribution of pamphlets of information, stereopticon lectures, exhibits, and definite provision for eliminating the advertising "specialists" and venereal disease nostrums. A free night clinic with four physicians in attendance should, the committee believe, be instituted for a period of six months and made permanent if found during that time to be effective. *(Gertrude Seymour.)*

Special "Drops" prevent the danger from "BABIES' SORE EYES"
The drops will not hurt the baby's eyes
BUT
If they are not used, the Baby MAY GO BLIND
2 National Committee for the Prevention of Blindness, Inc., 130 East 22d Street, New York, N. Y.

Venereal Criminals in New York.—The enforcement of the new law aiming to secure better control of venereal diseases in New York State is proceeding steadily and with determination. In New York City a clinic has been established in connection with the night court. On the first night of its operation there were ten women arrested under the new law, nine of whom, upon examination, proved to be infected

with a venereal disease. The procedure followed by the magistrates is the reference of all women who are arrested to physicians in the clinic for examination. They are remanded for three days for this purpose. If, after due test, they are proved infectious, they are sent to one of the institutions designated by the Department of Health, for treatment. They return to the court again when pronounced free from the infectious stages of disease, and then receive sentences proportionate to their offenses.

Rules and regulations are now being worked out by the Department of Health which cover the kind of treatment, the means of isolation, and the determination of freedom from infection. Although the law gives to each woman the privilege of consulting a private physician, this clause has not as yet been claimed, since the examination by the Department of Health is given without cost. *(Gertrude Seymour.)*


DON'T LISTEN
PEOPLE TELL YOU
"It's only a cold in the eyes"
"Use a poultice of tea leaves," etc.
THIS IS DANGEROUS ADVICE
NO HOME REMEDIES WILL CURE
"BABIES' SORE EYES"
National Committee for the Prevention of Blindness, Inc., 130 East 22d Street, New York, N.Y.

CONNECTICUT HEALTH NOTES

J. P. Balfe, former chief statistician of the Boston Health Department, has been appointed director of the Bureau of Vital Statistics, Connecticut State Department of Health.

Connecticut has just issued in pamphlet form the first chapter of its Sanitary Code relating to communicable diseases, which includes a very comprehensive section on the control of venereal diseases.

The Connecticut State Council of Defense has recommended an appropriation of $5,000 for a director of Public Health Nursing and Infant Welfare, $5,000 to coöperate with the Federal government in extra cantonment work in New London district and $20,000 for the establishment of hospitals for the care of women suffering with venereal diseases.

The plan of sending a birth certificate to the mother of every new-born child in the state has been adopted in Connecticut. This certificate is signed by the governor and commissioner of health, and will no doubt stimulate reporting of births.

MICHIGAN HEALTH NOTES.

Dr. E. T. Abrams, vice-president of the Michigan State Board of Health, died at his home in Hancock, May 21. His successor has no yet been appointed.

The City of Kalamazoo has been added to the list of cities employing full time health officers. Dr. A. H. Rockwell, former city physician, is the appointee.

Dr. W. F. English, a member of the State Board of Health, has received a major's commission and has reported for duty, being stationed at Fort Wayne.

The warm weather is making many demands upon the State Board for medical assistance in controling epidemics of typhoid and scarlet fever. The department has employed the services of a full time medical inspector, who spends his time in investigation of reports of epidemics and renders the necessary assistance in placing diseases under control.

Dr. C. G. Paraall, health officer of the city of Jackson, resigns his position July 1 to accept an appointment at the University of Michigan, in connection with the students' clinic.

E. R. Chambers, bacteriologist at the branch laboratory at Houghton, has entered the service, and was granted a leave of absence by the State Board of Health. George T. Buckell, assistant chemist in the Lansing laboratory, has been appointed to temporarily fill the vacancy.

General Medical Board, Council of National Defense Makes Report.—At the annual meeting of the General Medical Board of the Council of National Defense on May 5, 1918, a report on the activities during the past year was made, a summary of which appeared in the *Official Bulletin* for May 9, 1918. Some of the more important activities are briefly recorded below.

A child welfare committee was formed to study the best graphic methods for teaching child welfare; to study food values and diets for children; the midwife problem and the advisability of institutional care for children. A large program against venereal diseases was formulated and steps taken to establish venereal disease clinics. A campaign against the sale of patent medicines was also begun. Hospitals were classified as to size, convenience of transportation, equipment and other details. Committees were appointed to study into the problems of drug addiction, alcoholic control, public health nursing, tuberculosis, health statistics and industrial hygiene. Pupil nurses in training schools were increased by 20 per cent through the efforts of the General Medical Board. Plans have already been presented to the Secretary of War for the reëducation and rehabilitation of the wounded soldiers. Numerous antiseptics and disinfectants were examined and card indexed. Various preparations of thromboplastin were developed to help prolong the period for coagulation of the blood. These are but a few of the numerous things that have been accomplished. (*M. P. H.*)

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The Question of School Closure.—It is the opinion of Dr. Alfred Greenwood, county medical officer for Kent, England, that the schools should only be closed in circumstances involving imminent risk of an epidemic, and where no alternative action is feasible. In the case of diphtheria it is really best to keep the schools open because that facilitates the tracing of the disease and the children may be more efficiently inspected and controlled by bacteriological examinations. The same opinion is rendered for scarlet fever because the disease generally spreads slowly, lasts long, and is kept up by slight or missed cases which can be more readily detected by close inspection at school.—*The Medical Officer*, March 16, 1918. (*M. P. H.*)

Conservation of Vision Classes.—These classes are maintained for the benefit of those children who are not blind, but whose vision is so much reduced that they cannot do the regular classwork, or whose eyes are in such condition that the doing of much close work might make them worse. The oral work is done in the regular classrooms, where the children recite with the normal children. The written work is done on the blackboard or on blackboard desks, and pupils above the fourth grade are taught to write upon the typewriter, using the touch method. The text-books are all specially printed in clear face, heavy 36-point type, on unglazed paper of a buff tint, which is easily read. Much attention is given to manual training. The aim is not only to educate the partial seeing child with the least amount of eye strain, but also to teach him the kind of work he can do and how much he can use his eyes without harm, after leaving school.—*Cleveland Medical Journal*, 1918, p. 245.

(*D. G.*)

3 National Committee for the Prevention of Blindness, Inc., 130 East 22d Street, New York, N. Y.

Function of a Dispensary.—The aim of a modern, far-seeing, public dispensary is well expressed in the annual report for 1917 of the Boston Dispensary:

1. To relieve misery by prompt and efficient medical, nursing, and social service;

2. To diminish the financial burden upon the sufferers, their employers, and the public;

3. To prevent disease as well as cure it, by education of patients and of the community in measures of personal and public hygiene.

(*M. E. C.*)

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Prepared Meat Foods and Disease.—In *Public Health* (London) for April, 1918, Dr. W. G. Savage discusses the question of disease in relation to prepared meat foods. This term generally includes such foods as brawn sausages, saveloys, polonies, meat pies, salted meats and canned meats. Food may be infected either because the animal was diseased, or because the pathogenic organisms have gained entrance during the preparation or handling. To avoid the former possibility the internal organs of the animal, such as the liver and kidney, should not be used in the preparation of the food. Diseased meat should also be avoided. The food should always be thoroughly boiled or cooked before consumption, although even this process will not remove the danger from poisoning due to the presence of toxins from the Gaertner group of bacilli. Sausage skins should be sterilized before being used and should not be used freshly prepared. Preservative when added in small amounts to meat foods are injurious because they inhibit the development of putrefactive bacteria without affecting the Gaertner group of bacilli at all. The slaughter house should be kept separated from the food preparation room, and every precaution of cleanliness and decency should be practiced. The food handlers should be examined in order to exclude the possibility of disease carriers.

(*M. P. H.*)

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Combating Venereal Diseases.—The Indiana State Board of Health has entered energetically into the work of fighting venereal diseases, and has organized clinics in each one of the thirteen Congressional Districts. Surgeon J. O. Cobb of the U. S. Public Health Service, has been detailed to coöperate with the State Board of Health. The first clinic will be organized and started at Valparaiso, Porter County, June 7. At that city there is a Vocational Training Detachment of the National Army with 1,500 men in attendance. The University at Valparaiso furnishes the facilities for instruction. The plan of organization is to secure the passage of an ordinance by the city which carries a sufficient appropriation. An office will be established and clinicians of experience and skill will be constantly in attendance for the first two or three weeks and thereafter once or twice a week.

Every man in the camp will be examined by the camp surgeons and the work of the State Board of Health will be to look after venereal diseases among the inhabitants of the city. Although the work will be done under the ordinance and at the expense of the city, the physician in charge will be a representative of the State Board of Health and in instances may be a representative of the U. S. Public Health Service.

At Indianapolis last November, the State

Board of Health joined with the city board of health in fighting venereal diseases. The police department and the police judge of Indianapolis are giving their cooperation. Suspected prostitutes are arrested upon suspicion and if convicted are sent to the State Woman's Prison at Indianapolis, where treatment is given them. If not convicted, they are remanded to jail for a few days, waiting further evidence, and at that period examination is made by the physicians of the State Board of Health, and if the patient is found infected, is placed in quarantine. Quarantine is in one wing of the city hospital and at the present time holds 12 patients, all under treatment and most of them knitting for the soldiers.

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Dried Milk as Infant Food.—The British Local Government Board has just prepared a report on the use of dried milk as an infant food. The report considers the testing of dried milk, the different methods of manufacture and distribution for sale, the chemical, physical, and bacterial characteristics, and the practical experience of its use in English, Belgian and French clinics. Where the baby cannot obtain mother's milk, or clean fresh cow's milk, it is recommended that dried milk should be used. Dried milk contains fewer germs than ordinary city milk, is less likely to contain pathogenic organisms, and will keep a long time if kept dry. The bacteria do not multiply in dried milk as they do in normal milk, and only that quantity of milk powder should be used as is required for a feeding. It is also pointed out, that there is no danger from scurvy or rickets.—*The Medical Officer*, April 13, 1918. (*M. P. H.*)

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The Significance of the Declining Birth-Rate. (Louis I. Dublin, *Science*, March 1, 1918.)—Not birth-control, but "birth release among the healthy and normal people of our country as a primary national duty" is urged by Doctor Dublin in this timely paper. "Such release," he says, "must be conscious and deliberate, the act of will of free individuals who thus express a highly moral purpose." This is the conclusion reached after a consideration of data showing that the United States, in common with the leading European countries, is suffering a serious decline in birth-rate which is selective in character.

The grave consequences of this change are more apparent in France than elsewhere, for there the birth-rate (18 in 1914) has declined to a point below the death-rate (19.6 for the same year), and the population has begun to diminish in number. In 1830 the rate was 30 births per 1,000 population, but there has been a gradual reduction of more than one third in the rate, so that as early as 1911 the birth-rate, 18.7, was lower than the death-rate, 19.6. On the other hand, the United Kingdom maintained a high birth-rate (over 30 per 1,000) up to 1895, and the German Empire up to 1909. Since these dates the birth-rates have declined rapidly in both countries.

The meager data available indicate that for every 1,000 population in the United States there are probably about 25 births and 15 deaths per year, which means a rate of natural increase of about 10 per 1,000 or 1 per cent annually. This is about the same as the rate of increase for England and Wales in the year before the war, and is not in itself particularly disquieting, although, "There has been a marked and continuous reduction in the birth-rate in the United States for a period of years." It is only upon looking beneath the surface that significant tendencies are observed. Without going into detail, the general points to be noted are:

1. That the great increase in total population is due chiefly to two factors: "(1) immigration, and (2) a high rate of increase in the foreign born rather than in our native stock."

2. That the decline in birth-rate has been selective, as elsewhere, and has been much more marked among native stock than among stock of foreign parentage.

3. That "The race stock which laid the foundations of our institutions during the critical period of our national existence is in large areas of the country no longer maintaining itself and its place is being taken gradually but surely by foreign races."

4. That further evidence of the selective character of the decline in birth-rate is furnished by the fact that college men have few children and college women still fewer.

5. That, on account of early mortality, the 12 or 15 per cent of persons who do not marry or marry too late for reproduction, and the more than 7 per cent of marriages that are sterile, it is necessary for each fertile marriage to produce on

an average close to four children in order that a population may remain stationary or a race stock maintain itself without increase or decrease. This estimate is based on American conditions.

6. That for the foregoing reasons, "The best blood of America is being constantly thinned out by the exercise of a conscious limitation of births and is being replaced by a stock of a different order. Our national standards are being levelled to meet more and more the lower quality of our population."

Doctor Dublin charges that the state is largely responsible for this condition of affairs. The education which the state has provided has "failed for the most part to inculcate national ideals" into the youth of the country and has trained girls for careers rather than for normal home life. Another "sin" charged against the state is that, "It has made no provision to reward, either substantially or with esteem, the women who . . . are willing to bring up families of normal size." Again the writer says that "Individual selfishness is at bottom the source of the evil I have described"; but even here the state is brought in for its share of responsibility, for he adds that "Under present conditions children are not an economic asset. Restrictive compulsory education and child-labor laws make children an expensive luxury which only the poor can afford."

The remedy suggested is a fuller realization that we live not for ourselves alone but for the community. To turn the tide, "our appeal must be made to the religious impulse in our individual lives." After further discussion of this point, the author closes with the conclusion given above.

Millard Knowlton, M. D.

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Tobacco Smoke and Pulmonary Tuberculosis.—Webb in a study on "The Effect of the Inhalation of Cigarette Smoke on the Lungs," finds that of a comparatively large body of young men (over 3,000), the proportion that was discharged from active army service because of active tuberculosis was no higher among the smokers, the men who had signs of chronic bronchial irritation, than among the non-smokers with what might be called normal bronchi.

The author of this editorial commenting on Webb's findings emphasizes the point that today with our newer knowledge of the relative incidence of infection and morbidity, few would believe that if men with inflamed throats and bronchi fell ill with tuberculosis, this disease was the result of recent infection. We should be more inclined to believe that the disease represented the awakening of old quiescent tubercle, planted perhaps years before. Irritation of the upper respiratory tract in an adult plays no part in infection. If it does anything, it probably resists a fresh infection. That while too much inflammation is bad for a tubercle, a little bit of inflammation either exerts no deleterious effect on it or may, indeed, be good for it. That is, everything else being equal, the net effect of a mild irritation is mildly "stimulating" and tending to repair.—Allen K. Krause, *Amer. Review of Tuberculosis*, 1918, II, 99.

(D. G.)

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Health Standards and Care for the Immigrant.—In response to the nation-wide demand for better and more thorough ways of Americanizing the immigrants in the United States, the Carnegie Corporation has undertaken a national study of the methods of Americanization now in use. The work is to be done by ten divisions which are to conclude the study in a year.

The Division on Health Standards and Care, under the direction of Michael M. Davis of Boston has begun its study. The aim of this particular division is to learn what the health agencies throughout the United States are doing to teach the immigrant our American standards of health. A special effort will be made to study methods which have been successful in some localities and to develop from these recommendations for communities having similar problems. The division earnestly desires the coöperation of health departments, hospitals, dispensaries, industries, nursing and medical associations, and all the national organizations working to promote the public health. Any suggestions which have developed from the experience of these organizations will be most welcome. It is hoped that by means of this national survey material can be secured which may prove helpful to those individual groups who are striving to make the immigrant a better American citizen.

Prevention of Blindness.—The National Committee for the Prevention of Blindness in order to bring before the public the menace of eye defects and diseases, and the manner of overcoming them, has prepared an exhibit for this purpose. The exhibit comprises five posters (20 inches by 26 inches) well illustrated. A set of these can be obtained for 50 cents from the committee (130 East 22d St., New York City).

(D. G.)

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Enlarged Neck Glands from Decayed Teeth.—Baude, writing in the *Paris Médical*, and quoted by the *Journal of the American Medical Association*, May 11, 1918, emphasizes the importance of the teeth in producing enlarged glands of the neck. The cause of such enlarged glands often should be laid at the door of decayed teeth rather than of the tubercle bacillus. In many instances, glandular infection with the tubercle bacillus is secondary to ordinary inflammation. This writer feels that proper treatment of the teeth should be an indispensable preliminary to any other form of treatment. If the patient cannot afford the time or expense of careful dentistry, extraction of the tooth is indicated.

(M. E. C.)

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracts by Drs. E. R. Hayhurst and P. M. Holmes.

Delayed Reaction Time a Cause of Accidents.—The French medical authorities on aviation candidates are rejecting such candidates where their reaction times including the visual and others to normal stimuli are slowed or not up to the noraml standard. The reaction time may be delayed by fatigue, drugs, and excesses, but in some individuals is invariably much slower than in others. (A similar explanation can undoubtedly be frequently given for industrial accidents and bespeaks the advisability of including such tests in the physical examination of certain employees.—E. R. H.) H. Graeme Anderson. *British Medical Journal*, 1913, Vol. I, p. 73.—It is interesting to note in this connection, however, that equilibrium tests as established in the Bárány chair in which the individual is rapidly whirled, are without apparent correlation to actual flying ability and individuals who "fell down" on the tests have proved to be acceptable flyers.—R. P. Parsons and L. H. Segar, *Jour. A. M. A.*, April 13, 1918, p. 1064.

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Lead Poisoning Simulating Mumps.—J. Comby, in a French medical journal, cites 12 cases of lead poisoning with chronic parotitis having an aspect like that of mumps. The enlarged glands were not tender and did not seem to incommode the men. Other signs of lead poisoning were present.—Abstracted by *Jour. A. M. A.*, March 16, 1918, p. 816.

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Instructions for the Inspection of Plants Where Anilin is Produced or Handled. *Bureau of Hygiene and Sanitation (John Roach, Chief), Department of Labor, New Jersey*, Trenton, N. J. 6 pp. This pamphlet is timely, in view of the importance of anilin in a number of industries, among which may be mentioned dyes, rubber, explosives and some cleaning processes.

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Prevention and Control of Disease in War Industries.—Fatigue, industrial poisoning, defective illumination, dust, fumes, heat and humidity are instrumental in the disorganization of industries fundamental in the successful prosecution of the war. Success in manufacturing and transporting war materials can only be achieved by maximum continuous production over the entire interval of the war. The most important feature influencing production is keeping the worker well. An adequate program of supervision of health in war industries should include: (1) the creation of minimum standards of industrial hygiene; (2) sanitary supervision of premises, buildings and processes; (3) medical supervision of workers; (4) the avoidance of industrial fatigue; (5) education

in personal hygiene; (6) collateral studies of the effect of fatigue, rest periods, monotony, mental and physical stress; (7) sanitary supervision of industrial communities; (8) introduction of measures which will safeguard the moral side of bodily health.—J. W. Schereschewsky, M. D., *Medical Record*, April 6, 1918, p. 5.

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Labor Getting Behind Health Insurance.—In a series of three reports the N. Y. State Federation of Labor has endorsed compulsory health insurance and has drafted a bill which is now pending in the state legislature. They have concluded that there is an unmistakable trend toward state-administered health insurance, and that they "may hold back blindly until a bill is passed which is disadvantageous and burdensome, or have a bill so drafted as to protect and promote the interests of organized labor." Health insurance will cause employers to assume financial responsibility for that portion of sickness rightfully attributed to industry and will give them a new interest in sickness prevention. The introduction of health protection devices will be given the attention formerly given only to safety devices. This is best stimulated when it means a reduction of the insurance premium. If the world war is to result in permanently improved conditions for those who suffer the hazards of occupational disease and premature death, it must come through a more democratic relationship between employers and employees. —*The Survey*, March 30, 1918, p. 708.

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Conference of Industrial Physicians in Pennsylvania.—More than two hundred and fifty physicians attended the Sixth Conference of Industrial Physicians and Surgeons held at Harrisburg on April 9 under the direction of the Pennsylvania Department of Labor and Industry.

Dr. Francis D. Patterson, Chief of the Division of Industrial Hygiene and Engineering, presided, and a program of extraordinary interest and timeliness was presented.

Mrs. Samuel Semple, woman member of the Pennsylvania Industrial Board, offered the results of her recent investigation into the employment of women in Pennsylvania in so far as they are replacing men. She warned particularly against their employment in occupations demanding the lifting of heavy weights, prolonged standing, or excessive stretching; and spoke most forcibly against the relaxation of any of the protective laws which Pennsylvania has thrown about its workers.

Major Edward Martin, Major Joseph C. Bloodgood, and Dr. Loyal A. Shoudy urged cooperation of all industrial physicians with the government to maintain every worker at the highest point of physical efficiency for the better performance of his work in industry and so that he may be physically fit to perform the duties devolving upon him if called from his place in the shop to a place in the fighting line. And further that every physician and surgeon should endeavor so to reconstruct and rehabilitate the injured in industry that all workmen disabled by accident may at the earliest possible moment be returned to performing a maximum of service for the government.

A large series of motion pictures showing the method of training cripples to enter useful and remunerative occupations, which films have just been produced under the direction of the Surgeon General of the Army, were a most interesting feature of the program.

The discussion of the question of Amendment to the Pennsylvania Workmen's Compensation Law by widely divergent and very representative interests brought forth almost the unanimous opinion that this law should be amended so as to provide for compensation to the physician during the entire period of treatment of the injured workman, that the waiting period for compensation to the injured person be decreased, and that a larger percentage of wages be given in compensation than is now awarded under the present act. (*F. D. Patterson, M. D.*)

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Nystagmus Can be Caused Through an Accident.—Nystagmus or a spasmodic movement of the eyes, frequently affecting miners and others working in a dim light and a stooping position, and always hitherto considered an occupational disease, can be caused by a blow on the head according to a decision recently rendered by the Superior Insurance Office in Dortmund, Germany. The decision was based on the mass of evidence produced in connection with a case for accident compensation.—*U. S. B. of L. S.*, March, 1918, p. 193.

Ventilation and Respiratory Diseases.—An important summary is given in the news column of the *J. A. M. A.*, March 30, 1918, p. 941, of the findings of the Bureau of Child Hygiene in New York City and the State Commission on Ventilation in classroom ventilation. Investigation was carried on among 5,533 pupils of 76 classrooms in 12 schools operated under three different types of ventilation and for a five months' period in the fall, winter and early spring. The conclusions follow: "In the closed window, mechanically ventilated type of classroom kept at a temperature of 68 degrees F., the rate of absences from respiratory diseases was 32 per cent higher than in the open window, naturally ventilated type of classroom kept at the same temperature (about 68 F.) and about 40 per cent higher than in the open window, naturally ventilated type of classroom kept at a temperature of about 50 degrees. The relative humidity of classrooms, whether ventilated by natural or mechanical means, was not a causative factor in the occurrence of respiratory illness among school children."

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Compensating Physicians for Reporting Occupational Diseases.—According to Porter, Medical Officer of Health, London, it is the custom in London for the city to pay small fees for reporting communicable diseases with the special idea of securing coöperation of family physicians. (Contrary to the prevailing opinion that physicians should consider it a part of their duty to the state to report notifiable diseases of all types, including occupational diseases, without compensation therefor, is the opinion voiced by some that such reports constitute part of the bookkeeping of the commonwealth and as such should be paid for. It is clear that the commonwealth needs such statistics and were the matter presented clearly, the people would have no objection to paying for the same. By what assumption physicians should be presumed to perform such services gratis when county clerks, lawyers and others invariably receive a fee for similar services, is certainly enigmatical. —E. R. H.)

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"Adequate Ventilation" Defined.—A resolution adopted by the Health Department of New York City on December 11 states that in the interpretation of the Sanitary Code the term "Adequate Ventilation" will be as follows: (1) The temperature of rooms during periods of occupancy should register preferably from 60° to 70° F. at all times, except when the outside temperature exceeds 60°. This does not apply to rooms used for special purposes, such as industrial places where high or low temperatures are essential and unavoidable. (2) The relative humidity in occupied rooms should not exceed 70 per cent, except when the outside (wet) bulb temperature exceeds 59°. (3) The carbon dioxide in occupied rooms of all classes should not at any time exceed 10 parts in 10,000 volumes of air in any part of the occupied spaces of the rooms. (4) The dust particles in the air of occupied rooms in all classes of buildings should not exceed 1,000,000 per cubic foot. (5) The bacterial content should not exceed 100 per cubic foot. (6) The air of occupied rooms should be free from objectionable odors.—*Medical Record*, March 9, 1918, p. 426.

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